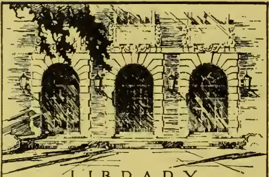

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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

1881-82.

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# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen:*

The President of the College has the honor to submit the following report for the academic year 1881–82; namely, from September 20, 1881, to September 19, 1882.

The Corporation has lost no member by death during the year. Henry B. Metcalf resigned his office on account of the pressure of private business. The following persons have been elected to the vacancy thus caused and one other previously existing,—

Newton Talbot and
William Oscar Cornell.

At the beginning of the year Stephen Minot Pitman, Professor of Chemistry, was granted leave of absence for six months, which was renewed at the mid-year. At the expiration of his second leave he resigned the office which he had held since 1877. Professor Pitman is an able chemist, a faithful and industrious teacher, inspiring students by his activity and enthusiasm, and the Trustees accepted his resignation with regret. During the

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absence of Professor Pitman the duties of the department were acceptably performed by

ARTHUR MICHAEL,

who has been elected to fill the vacancy caused by Professor Pitman's resignation.

The condition of the College is encouraging. It is true the resources of the institution are not yet equal to the demands upon the treasury. But the work of securing subscriptions has been materially advanced, and several large subscriptions have been paid. The committee of the Trustees, appointed for the purpose, is diligently seeking contributions to the funds with a reasonable prospect of success in several directions. The number of students is increasing. The entering class of this year is larger than for several years previous, and the promise for the coming year is excellent. Important facilities have been added to the laboratories, which will make the working of the scientific departments more efficient.

Under the rules adopted last year two boards of visitors were appointed, one for the College of Letters and one for the Divinity School. Owing to the lateness of the appointment the boards were not organized for work before the mid-year. But after their organization the work of inspecting the several departments was performed as faithfully as could have been expected of gentlemen so variously occupied and living at so great a distance from the College. Their visits have been cordially welcomed by teachers and pupils, and their presence in the lecture-rooms has awakened a fresh interest. The impressions derived from these inspections will be given in the reports from the boards of visitors through their regularly appointed heads. The experience of the past year justifies the wisdom of the provision. No better way can be devised of bringing the College into intelligent contact with the outside public. It can not be without value as a stimulant to the teacher to feel that the public, for whose exaltation and culture he is laboring, may at any time inspect his work. It is important, also, that the public should know by careful and intelligent observation how well the College keeps up to its standard, and the progress it is making from year to year in its facilities and methods.

The reorganization demanded by the new bylaws set before the faculties in a new light the organic unity of the different departments of the institution. After careful deliberation by the entire academic body, the conclusion was reached that the public exercises of Commencement, instead of being confined to a single department, should afford appropriate representation to all the different lines of work pursued in the College. It was voted, therefore, hereafter to discontinue the public anniversary of the Divinity School, and to give place upon the Commencement programme to representatives of the Divinity School, the department of Civil Engineering and the class of graduate students who have completed the prescribed course of study for the degree of Master of Arts. The present year was thought to be the most favorable time for making this departure, as there was no candidate for the degree of C. E., and but one for the degree of B. D. The mature and thoughtful character of the master's oration, worthy in every way of the stateliest academic occasion, went far to justify the wisdom of the change. No doubt, also, an advantage will be found in concentrating upon a single occasion all the different sorts of interest in the institution. It is far better that all the friends of the College should be drawn together by one event of crowning importance, than that the same friends should be gathered piecemeal by events which are comparatively insignificant. As the number of graduates who come back "full of years and honors," to renew the associations of their youth increases from year to year, our Commencements gain in interest. This change, it is believed, will promote the interest, as the exercises will be of a higher character and more worthy the attention of thoughtful and scholarly men.

I have to report that the physical laboratory has received the welcome addition of a dynamo-electric machine of the Gramme pattern, together with a five-horse power steam engine to run it. Both the machine and engine are the gift of Henry B. Metcalf, Esq., of Pawtucket, R. I.

In my report of last year I mentioned the fact that a generous friend had made provision for the erection of a chapel. It is no longer a secret that this friend is Mrs. Mary T. Goddard, a lady whose previous gifts to the College have been manifold and munificent. The architectural work upon the building was committed to J. Philip Rinn. Early in the year the Building Committee contracted with competent builders for the different parts of the work and material. The mason's work is now nearly finished and the carpenter's work is well advanced. The architectural character of the building is very satisfactory. It is an agreeable object in the landscape from whatever side it is viewed, and adds a new charm to our already impressive cluster of buildings. It furnishes also an appropriate centre around which future structures may be grouped.

Long-needed, almost indispensable to the highest usefulness of the College, as was this gift, it serves to emphasize still more strongly our needs in other directions. The demand of the undergraduates is almost constantly for a gymnasium, and many parents are urging upon the authorities the importance of this means of promoting health and physical development. Interviews have been held with several persons in reference to making this provision, but no one has yet been found who was ready to do it. The increase of apparatus in the laboratories, and the accumulation of treasures in the museums render a scientific building a necessity at no distant day. The President has been invited by a gentleman, deeply interested in the matter, to study plans with reference to the erection of such a building, and he hopes that before long provision will be made to begin the work. The Library now contains twenty thousand bound volumes, many of them are rare and of great value. The shelves in the rooms assigned to them are over-crowded, and the means for handling them are imperfect. The need of a suitable fire-proof building for the Library is imperative. Besides these requirements it is very important that, as soon as practicable, a hall should be erected for the Divinity School. In view of the function which the Divinity School performs in furnishing an educated ministry to the church, there ought to be many persons who would esteem it a privilege to provide the facilities which are needed to render it most effective in doing the work for which it was established.

The whole number of students admitted to the College during the year is thirty-three. They are distributed as follows:—

| | |
|---|---|
| Freshman Class, . . . | 19 |
| Engineering Department, . | 5 |
| Divinity School, . . . | 9 |
| Total, . . . . | 33 |

The whole number of degrees given in course at the last Commencement was twelve—as follows:—

| | |
|---|---|
| Bachelor of Arts, . . . | 10 |
| " of Divinity, . . | 1 |
| Master of Arts, . . . | 1 |
| Total, . . . | 12 |

The whole number of students in the College, in all departments, is ninety-one. They are distributed as follows:—

| | |
|---|---|
| Undergraduates, . . . | 65 |
| Divinity School, . . . | 17 |
| Graduate Students, . . | 9 |
| Total, . . . | 91 |

Besides a brief statement of the work performed in each department, a table is appended hereto which will give the names of instructors, the subjects of instruction, the nature and amount of work, the text-books used, the number of pupils in each class, and the number of recitation hours.

In the department of Latin the usual ground was covered by the sophomores and freshmen. A course of lectures was given by the professor on the history of the Latin language, together with illustrated lectures on Roman topography. Two seniors elected Latin for the whole year, reading a comedy of Plautus and of Terence, selections from Pliny's Letters, and the first book of Cicero de Natura Deorum. Two Juniors also elected for a half-year, reading Sallust's Jugurthine War. In reading the Latin authors the principal aim has been to understand the construction of the language, involving a careful study of the syntax, to perceive the spirit and precise meaning of the author read, and express them in good idiomatic English. In the study of history and antiquities the object has been to acquire a good general knowledge of the life and manners of the Romans, their polity and religious system, and to discover the causes of the changes which took place in their government, religion, and domestic life.

Owing to ill health, leave of absence was given to Dr. Schneider for the year. The time was spent by him in Europe under medical care. He is now thought to be fully restored, and will return to his work at the beginning of the next college year. In his absence Professor B. G. Brown met the freshmen six times a week for the first half-year, and four times a week for the second half-year, reading Xenophon's Memorabilia and Homer's Odyssey. Mr. Klinghammer met the sophomores four times a week during the first half-year. During the second half-year five sophomores took the Greek option and recited three times a week. One senior elected Greek during the second half-year, meeting the instructor three times a week. Mr. Klinghammer also gave instruction to the freshmen once a week during the second half-year in Greek prose composition. No text-book was used. The exercises were given to the class by dictation, and corrected at the board in the following recitation, care having been taken to illustrate all the most important principles.

In the department of Mathematics the class in Calculus was composed of the second year engineers and two juniors, who elected the study. They met the professor three times a week throughout the year. In Analytic Geometry twelve sophomores and two engineers recited four times a week. The freshmen gave sixteen weeks to the study of Algebra, four weeks to Solid and Spherical Geometry, and the remainder of the year to Trigonometry, meeting the professor four times a week. Four members of the class continued the study of Algebra after the class had finished this branch, as an extra elective, once a week. As soon as the freshmen had learned enough of the principles of Trigonometry to understand their applications, the Walker Special Instructor gave them an exercise once a week in field-work. He also gave instruction four times a week for the first half-year to those sophomores who preferred to take advanced Geometry, in that subject, and in the applications of Trigonometry to Astronomy.

The juniors had instruction in Physics four times a week for the first half-year, and three times a week for the second half-year. The sophomores had three recitations a week for the second half-year. Two undergraduates elected laboratory work three times a week for the year, and one three times a week for a half-year. Two graduate students also spent several weeks in the laboratory studying the special subject of electricity. On account of the urgency of private business the professor was granted leave of absence for three months towards the end of the college year. During his absence Mr. Klinghammer had charge of the class in Mechanics, and Mr. Buck of the remainder of the work in that department. The facilities which the new electrical machine and engine will furnish, render it desirable that a course of study should be arranged in Electrical Engineering, for such students as desire to pursue the subject. The demand for competent electricians is much greater at present than for engineers in any other department, and only a few institutions in the country are prepared to give the necessary instruction. It is the intention of the department to organize such a course during the coming year.

In the department of Chemistry instruction was given in inorganic Chemistry to the juniors for the first half-year. The recitations were supplemented by a large number of experiments, made in the presence of the class by the instructor. Two seniors took a course of lectures in organic Chemistry, as an optional study for the last half-year. In the laboratory instruction was given in inorganic and organic Chemistry, and in qualitative and quantitative analysis.

In the department of Natural History the seniors completed Zoology and Geology, meeting the professor for recitations and lectures four times a week for the first half-year. The juniors completed Botany and began Zoology, having four recitations and lectures a week. Eight sophomores elected Physiology during the second half-year, meeting the professor three times a week. Four seniors elected Biology for the first half-year, with three exercises a week of two hours each. Six students elected Mineralogy for the second half-year, having three exercises a week of two hours each.

John Alexander, M. D., of Belmont, has given to the Museum a large and choice collection of plants, and a valuable collection of minerals and antiquities, among which is a portion of a steatite slab from Nineveh, ornamented with finely carved figures of animals. The plants and minerals were collected by Dr. Alexander himself, in his travels in different parts of the United States. A very fine collection of Silurean and Carboniforous fossils were given by the Rev. L. C. Chandler, of Pennsylvania. Large crystals of apatite and mica from Canada, a large slab of flexible sandstone from North Carolina, and fossil rain-prints in argillite from Somerville have been added to the Museum by the professor.

The general character of the work in the department of Modern Languages has been similar to that of former years. An effort has been made, however, to adapt the work more nearly than heretofore to the attainments of those engaging in it. Those classes of students to whom this specially applies are freshmen in the philosophical course, sophomores of the regular course who have pursued French for some time before entering college; and such students as may have pursued German in their fitting course beyond elementary work. This result has been accomplished by making new class combinations and by varying the methods and authors according to the capacities and attainments of students. The programme, as thus arranged, required of the professor seventeen hours of class work a week. This would have been increased in the second half-year had there been the usual number of elective classes. One hour a week for the year was assigned to a candidate for the Master's degree, the careful oversight of whose work made a more serious demand upon the professor's time than the preparation for several undergraduate classes.

At no time has the work in the department of Oratory been more satisfactory. There seems to be a healthy interest on the part of students in all that pertains to expression in reading and speaking. The elective system for the two upper classes has been productive of the best results. Seven juniors and seven seniors took the elective course in this department. In the judgment of the professor, experience has shown that only those who have manifested a taste and inclination for oratory by electing it, except possibly in cases of rare scholarship or extraordinary abilities in composition, should be permitted to appear upon the Commencement platform.

In the department of Rhetoric, Logic and English Literature, of required work the seniors had Psychology three times a week for the second half-year, the juniors had Logic three times a week for the second half-year, the sophomores had Rhetoric four times for the first half-year, and each of three upper classes presented three themes. There was an English option four times a week in the second half-year. There were also two elective classes in each half-year, and three hours a week were given to each class. The time given to required work is somewhat increased, and the work has therefore been done under more favorable conditions. Themes have not been required of freshmen, owing to the great difficulty of making the requirement useful when no time is assigned to it in the programme. Themes of sophomores have been required to be re-written, and the results have been such as to warrant the extension of this requirement to all theme work. At the best this exercise falls short of what ought to be accomplished, largely because the tests to which the work is subjected are not such as to furnish the most effective stimulus to the writer. Public presentation of a portion of the work, by declamation or otherwise, would probably afford profitable incentive, but can hardly be provided for except through the general scheme of college work.

Work in the department of Engineering presents no new features. There was no third class this year, and hence none to take the degree of C. E. Some of the older graduates in engineering, who are occupying positions of responsibility, have shown recently a marked interest in the College. Mr. Russell, Engineer of the Mississippi River Commission, has presented the department with a set of valuable maps and charts. Mr. Farnham, locating engineer of the Rio Grande Railroad, has given plans, profiles and detail drawings. I have to acknowledge in behalf of this department the receipt of a fine pair of indicators, the gift of Charles Whittier, Esq., of the Board of Trustees.

During the first-half year the time of the President of the College was mainly occupied in soliciting subscriptions to the funds, and attending to the outside interests of the institution. The instruction in Ethics was therefore committed to Professor Tousey, who met the seniors four times a week for the first half-year. During the second half-year the President met them four times a week in Political Economy.

The statistical report of the Librarian shows that the Library has received an increase by gift and purchase of four hundred and eighty-five bound volumes, of these sixty-seven were purchased from the income of the Joy fund. A fine edition of the Nouvelle Biographie Générale, in forty-six volumes, is the gift of William B. Bement, Esq., of Philadelphia. The condition of the Library under the necessary limitation of expenditure calls for no extended comment. Such additions as can be made are slowly increasing its value. The great need in its relation to college students is of the means of supplying from month to month a number of new books.

The College is indebted to the Rev. E. C. Bolles, Ph. D., D. D., for a valuable course of eight lectures on Historic London.

The Report of the Dean of the Divinity School is herewith submitted, and the attention of the Trustees is earnestly called to it. The need of a special endowment of the School is very pressing. The President of the College has omitted no opportunity to urge this matter upon the consideration of those who, he thought, were financially able and sufficiently interested either to furnish the endowment or make an encouraging beginning towards it. The Trustees would doubtless be glad to give the name of the School to the individual who would provide a considerable fund for its separate maintenance. There is hope, I may be permitted to say, that some one may be found shortly who will do this friendly and generous act.

ELMER H. CAPEN.

*Tufts College, Sept.* 19, 1882.

# TABULAR STATEMENT.

## PRESCRIBED STUDIES (SENIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books — Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| President Capen. | Pol. Economy. | Fawcett's, with Lectures. | 10 cl. | 4 for ½ year. |
| Prof. Marshall. | Zoology.<br>Geology. | Nicholson's, with Lectures.<br>Dana's, with Lectures. | 12 cl. 1 sp. | 4 for ¼ year.<br>4 for ¼ year. |
| Prof. Shipman. | Psychology.<br>Rhetoric. | Porter's Human Intellect, to Part IV.<br>Six Themes. | 12 cl. | 4 for ½ year. |
| Prof. Tousey. | Ethics. | Bascom's and Calderwood's. | 12 cl. | 4 for ½ year. |

PRESCRIBED STUDIES (JUNIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books — Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Marshall. | Botany.<br>Zoology. | Gray's Lessons and Manual, with Lectures.<br>Nicholson's. | 9 cl. 1 sp. | 4 for ¼ year.<br>4 for ¼ year. |
| Prof. B. G. Brown. | Calculus. | Byerly's Differential and Integral Calculus. | 2 eng. ii. | 3 for year. |
| Prof. Shipman. | Logic.<br>Rhetoric.<br>Eng. Lit. | Jevons's.<br>Six Themes.<br>British Authors (1580–1780) (*optional with Chemistry*). | 9 cl. 1 ph.<br>7 cl. | 3 for ½ year.<br>4 for ½ year. |
| Prof. Dolbear. | Physics.<br>Astronomy. | Ganot's, Heat, Light, Electricity, Physical Geography.<br>Newcomb and Holden's. | 11 cl. | 4 for ½ year.<br>3 for ½ year. |
| Prof. Fay. | German. | Theoretical Grammar in Lectures; Eysenbach's Practical Grammar (175 pp.); Zschokke Der todte Gast (80 pp.). | 12 cl. | 6 for ½ year. |
| Prof. Bray. | App. Mechanics.<br>Steam Engine.<br>Drawing and Field Work. | Rankine; Weisbach.<br>Forney's, with Lectures. | 3 eng. ii. | 3 for year.<br>4 for ½ year.<br>4 for ½ year.<br>6 for ½ year. |
| Mr. Michael. | Chemistry. | Roscoe's Elementary Chemistry.<br>Organic Chemistry, Lectures (*optional with Eng. Lit.*). | 11 cl.<br>2 cl. | 3 for ½ year.<br>4 for ½ year. |

## PRESCRIBED STUDIES (SOPHOMORE YEAR).

| *Instructor.* | *Subject.* | *Text-Books — Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Marshall. | Physiology. | Huxley and Youmans's, with Lectures (*optional with Greek*). | 6 cl. 2 ph. | 3 for ½ year. |
| Prof. Dearborn. | Latin. | Horace, Satires, Book I., Ars Poetica; Cicero, Lælius; Tacitus, Germ. and Agr.<br>Translation of English into Latin. | 13 cl. 2 ph. | 3 for year.<br>1 for ½ year. |
| Prof. B. G. Brown. | Mathematics. | Bowser's Analytic Geometry. | 10 cl. 2 ph. | 4 for ½ year. |
| Prof. Shipman. | Rhetoric. | A. S. Hill's; Six Themes. | 13 cl. 2 ph. | 4 for ½ year. |
| Prof. Dolbear. | Physics. | Mechanics, Magnus's; Sound, Stone's. | 11 cl. 2 ph. | 3 for ½ year. |
| Prof. M. T. Brown. | Oratory. | Lectures; Declamations. | 11 cl. 2 ph | 2 for ½ year. |
| Prof. Fay. | French.<br>(1st div.)<br>(2d div.) | Macmillan's (Fasnacht's) French Course (I. & II.)<br>Corneille, Horace; Racine, Phèdre; Molière, L'Avare, Le Misanthrope.<br>Lacombe, Histoire du Peuple Français. | 11 cl. 4 eng. | 6 for ½ year. |
| Mr. Klinghammer. | Greek. | Sophocles, Œdipus Tyrannus; Demosthenes, three Philippics; Reading at sight; Greek Composition. | 13 cl. | 4 for ½ year. |
| | | Demosthenes, De Corona (*optional with Physiology*). | 5 cl. | 3 for ½ year. |
| | Mathematics. | Olney's Advanced Geometry; Applications of Trigonometry to Astronomy. | 3 cl. | 4 for ½ year. |

## PRESCRIBED STUDIES (FRESHMAN YEAR).

| *Instructor.* | *Subject.* | *Text-Books — Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Dearborn. | Latin. | Livy, Book I.; Cicero, Cato Major; Horace, Odes, Book I.–III. | 17 cl. 2 ph. | 3 for year. |
| | | Harkness's Latin Composition, Part III.; Extempore exercises. | | 1 for year. |
| | | Roman History, Liddell, Rawlinson's Manual. | | 1 for year. |
| | | Roman Antiquities, Ramsay. | | 1 for year. |
| | | Lectures on the History of the Latin Language and Literature. | | |
| Prof. B. G. Brown. | Greek. | Xenophon, Memorabilia, Books I., II., IV.;<br>Homer, Odyssey, Books I.–VI. | 18 cl. | 6 for ½ year.<br>4 for ½ year. |
| | Mathematics. | Newcomb's Algebra; Wentworth's Solid and Spherical Geometry; Wheeler's Trigonometry. | 17 cl. 2 ph. | 4 for year. |
| Prof. M. T. Brown. | Oratory. | Declamation; Lectures. | 14 cl. 2 ph. | 2 for ½ year. |
| Prof. Fay. | French. | Buckingham's Grammar, Part II.; Racine, Phèdre. | 2 ph. | 3 for ½ year.<br>4 for ½ year. |
| Prof. Bray. | Engineering. | Descriptive Geometry, Church. | 4 eng. i. | 4 for ½ year.<br>2 for ½ year. |
| | | Surveying, Gillespie's. | | 3 for ½ year. |
| | | Drafting. | | 4 for ½ year.<br>2 for ½ year. |
| Mr. Klinghammer. | Greek. | Greek Composition. | 14 cl. | 1 for ½ year. |
| | Surveying. | Field Work. | 14 cl. 2 ph. | 1 for ⅓ year. |

## ELECTIVE STUDIES.

| *Instructor.* | *Subject.* | *Text-Books — Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Marshall. | Mineralogy. | Plattner's Blow-pipe Analysis, Laboratory Work. | 5 sen. 1 sp. | 3 for ½ year. |
| | Biology.<br>Zoology.<br>Botany. | Huxley and Martin's,<br>Packard's,<br>Bessie's and Sach's, } Laboratory Work. | 4 seniors. | 3 for ½ year. |
| Prof. Dearborn. | Latin. | Cicero, De Natura Deorum, Book I.; Plautus, Trinummus; Terence, Adelphi; Selections from Pliny's Letters. | 2 seniors. | 3 for year. |
| | | Sallust, Jugurtha. | 2 juniors. | 3 for ½ year. |
| Prof. B. G. Brown. | Calculus. | Byerly's Differential and Integral Calculus. | 2 juniors. | 3 for year. |
| Prof. Shipman. | Rhetoric. | American Oratory. | 6 se. 3 ju. 2 soph. | 3 for ½ year. |
| | | British Oratory. | 1 jun. 2 soph. | 2 for ½ year. |
| | Eng. Lit. | British Authors (1780–1880). | 7 seniors. | 3 for ½ year. |
| | | American Authors (1780–1880). | 6 seniors. | 3 for ½ year. |
| Prof. Dolbear. | Physics. | Electricity, Practical Work in the Laboratory. | 2 juniors.<br>1 junior. | 2½ for year.<br>2 for ½ year. |
| Prof. M. T. Brown. | Oratory. | Special Drill in Reading and Declamation. | 7 seniors.<br>7 juniors. | 3 for ½ year.<br>2 for ½ year. |

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Fay. | German. | Goethe, Egmont, Hermann und Dorothea. | 1 g. 2 sen.<br>1 ph. | 3 for ½ year. |
| | | Schiller, Wallenstein. | 1 sen. 1 soph. | 3 for ½ year. |
| | | Schiller, Maria Stuart (three acts); German Composition. | 4 juniors. | 3 for ½ year. |
| | French. | Racine, Les Frères Ennemis, Andromache; Demogeot, Histoire de la Littérature Française (16th century). | 2 juniors. | 3 for ½ year. |
| Mr. Klinghammer. | Greek. | Plato, Protagoras; Euripides, Medea. | 1 Senior. | 3 for ½ year. |
| Mr. Michael. | Chemistry. | Organic Chemistry, Laboratory Work. | 1 eng. | 3 for year. |
| | | Inorganic Chemistry, Laboratory Work. | 2 seniors. | 3 for ½ year. |
| | | Quantitative Analysis, Laboratory Work. | 1 soph. | 3 for ½ year. |
| | | Qualitative Analysis, Laboratory Work. | 2 seniors. | 3 for year. |

NOTE.—cl. denotes classical students; ph., philosophical; sp., special; g., graduates; eng., engineers. The Roman numeral after eng. denotes the class. Three hours of laboratory work in Chemistry and two in Natural Science and Physics are construed as one in the schedule.

# THE DIVINITY SCHOOL.

*To the President:*

In conformity with the regulations of this institution, I herewith respectfully report the condition and work of the Theological Department of Tufts College for the College year of 1881-82.

Our year opened with an addition of nine students. Three of these, all sons of clergymen, were college graduates, two from Tufts and one from Buchtel. These, as their course of study embraces but three years, graded with the second years men. Six entered as first years men for a course of four years. One of these, after pursuing his studies for some time, concluded, under the advice of the Faculty, as his age and the circumstances of his family favored it, to enter the College and take a regular course of study, before completing his theological education. One other member of the class at the close of the year took up his connection with the institution under a sense of incapacity to do the work of the School, and a feeling that he was not qualified for the profession to which for a time his aspirations had turned.

One young man finished the prescribed course of four years, passed a successful examination and graduated with the honors of the institution. He immediately entered upon the active duties of the ministry, becoming the pastor of a parish.

In respect to the work of the School, I hazard nothing in saying that it has never been better than during the last year. The students have uniformly exhibited a most commendable industry and a careful observance of their duties, while the increasing experience of the teachers, and the greater familiarity with the various matters treated have given to their instructions a directness and efficiency hitherto unattained. The various branches of instruction embraced in our curriculum, and the work done in each are more specifically exhibited in the accompanying tables to which I beg to refer. As to our methods and the character of our work, I presume you will be more particularly informed by the Report of the Committees who visited us and made themselves acquainted with the internal condition of the School.

I take pleasure in acknowledging the continued kindness of Rev. Mr. Biddle, of North Cambridge, in completing a course of Lectures begun the preceding year, on some of the peculiar aspects and duties of ministerial life. They were very interesting, and highly appreciated by both students and Faculty. I beg also to mention with satisfaction a course of Lectures by Rev. Dr. Emerson on the history of several Ancient Empires whose fortunes touched and affected the life of the Hebrew people and the interests of revealed religion. The subject is one with which he has made himself familiar, and his Lectures were listened to by the whole School with great pleasure and profit. Both these gentlemen deserve the thanks, not only of the Faculty, but of the Trustees and all friends of the School. During the year, let me add, the School has been laid under obligation to several of our former students, who returned after some years of service in the field of ministerial labor to speak a word of encouragement to those who were still in the process of preparation for the work of the Christian ministry. Such services, occasionally rendered, prove interesting and advantageous by occupying an hour in some field of thought to which our students have not been accustomed, and by inspiring them to make some excursions in their studies beyond the beaten paths of their daily work.

In conclusion permit me to repeat that our School is practically without endowment; is much in need of an appropriate building and a suitable library. Allow me to inquire if some plans might not be instituted, and means employed looking to the better condition of the School. I believe the friends of the School in Massachusetts, and indeed of all New England would gladly and generously respond to a call for this purpose.

I am anxious before I die to see this School placed on a firm foundation, and so conditioned as to go on with the work, so well begun, with increasing vigor and larger success. Our Church has no interest of deeper concern or more vital to its prosperity than good Theological Schools, and this, occupying as it does a place where our cause is oldest, best organized, and most prosperous, should ever stand foremost in its internal, as it naturally does in external advantages.

THOMAS J. SAWYER,

*Dean of the Faculty.*

FIRST YEAR. (SEE ELECTIVES BELOW.)

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Dr. Sawyer. | Archæology. | Jahn's, 1st and 2d parts complete. | 2 for ½ year. |
| | Old Testament Introduction. | Keil's, 2 vols. complete. | 2 for year. |
| | German. | Ahn's Grammar, Part I., and 60 pages of Part II. | 2 for year. |
| Prof. Tousey. | Logic. | Bain's Deductive Logic. | 3 for ½ year. |
| Mr. Knight. | Rhetoric. | A. S. Hill's; Spencer's Philosophy of Style; Analysis of Selections; Lectures connecting Grammar and Rhetoric; Eight Themes. | 3 for year. |
| | Greek. | Leighton's Lesson's; Goodwin's Grammar; 2 chapters in Anabasis. | 3 for year. |
| | New Test. History. | Maclear's; Gardiner's English Harmony; Lectures. | 2 for year. |

SECOND YEAR. (SEE ELECTIVES BELOW.)

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Dr. Sawyer. | German. | Selections from Whitney's Reader; Schiller's Wilhelm Tell. | 2 for ½ year. |
|  | Greek. | St. John's Gospel, 6 chapter's; Acts, 14 chapters. | 2 for ½ year. |
|  | Introduction New Testament. | Bleek's, Vol. I., and 175 pages of Vol. II. | 2 for ½ year. |
| Prof. Leonard. | Homiletics. | Phelps and Hoppin; Analysis of Sermons; Homiletical Analysis of portions of the Gospels. | 2 for ½ year. |
| Prof. Tousey. | Psychology. | Porter's Mental Science; Hamilton's Metaphysics. | 2 for ½ year.<br>3 for ½ year. |
|  | Logic. | Bain's Inductive Logic. | 2 for ½ year. |
|  | British Orators. | Goodrich's British Eloquence, with Lectures. | 1 for ½ year. |
| Mr. Knight. | Church History. | Hase's complete (except a part of the Middle Age).<br>Lectures on the growth and present status of the Modern Sects. | 2 for ½ year.<br>3 for ½ year. |

THIRD YEAR. (See Electives Below.)

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Dr. Sawyer. | Theology. | A. A. Hodge's Theology, to page 161; Lectures and Discussions. | 2 for year. |
| | Exegesis. | Select portions of N. T.—especially whatever is employed as proof texts of endless punishment. | 1 for ½ year.<br>2 for ½ year. |
| Prof. Leonard. | Homiletics. | Homiletical analysis of portions of the Acts and the Epistles; Plans; Composition and Delivery of Sermons; Criticisms, public and private. | 2 for year. |
| | Christian Evidences. | Row's Christian Evidences in view of Modern Thought; Lectures; Studies in Rawlinson, Dr. Young, Prof. Rogers. | 2 for year. |
| Prof. Tousey. | Ethics. | Calderwood's Moral Philosophy; Bascom's Ethics. | 3 for year. |
| Mr. Knight. | Hist'ry of Doctrines. | Hagenbach's, with Lectures. | 2 for ½ year. |

FOURTH YEAR. (SEE ELECTIVES BELOW.)

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Dr. Sawyer. | Comp. Theology. | Hardwick's Christ and other Masters, to Religion of Mexico. | 2 for ½ year. |
| | Theology. | The Special Doctrines of Universalism Systematically Considered; Lectures and Discussions. | 3 for ½ year. |
| Prof. Leonard. | Homiletics. | Written Analysis of Printed Sermons; Studies in plans of Sermons; Composition and Delivery of Sermons; Criticisms, public and private. | 2 for year. |
| | Church Polity. | Polity of the New Testament; Polity of Special Churches; Polity of Universalist Church. | 2 for ½ year. |
| | Pastoral Theology. | Studies in Hoppin and Vinet; Notes on the basis of Van Oosterzee; Lectures. | 2 for ½ year. |
| Prof. Tousey. | Natural Theology. | Paley's; Flint's Theism; Butler's Analogy; Lectures and Selected Readings. | 3 for year. |

## ELECTIVES.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Homelitics. | Post-graduate Course. Studies in Sermon-literature with special reference to Material, Method and Style. | 3 for year. |
| Prof. Tousey. | Logic. | Lectures on Fallacies, Critical Studies of Arguments. | 1 for ½ year. |
| Mr. Knight. | History. | Pericles, Cæsar, and Cromwell. | 1 for ¾ year. |

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# ANNUAL REPORT

OF THE

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# PRESIDENT

OF

# TUFTS COLLEGE.

1882-83.

# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

## 1882-83.

BOSTON:
PRINTED BY WALLACE SPOONER,
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1883.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen:*

The President of the College has the honor to submit the following report for the academic year 1882–83; namely, from September 19, 1882, to September 18, 1883.

The following Trustees have resigned during the year, namely:

Frank W. Draper, M. D., and
Hon. Henry B. Peirce.

The corporation has also been called to mourn the loss of

Israel Washburn, Jr., LL.D.,

whose death occurred very unexpectedly in May last. Mr. Washburn was the last surviving person whose membership of the corporation was continuous from its first organization. Since the death of Oliver Dean, M. D., in 1872, he had held the office of President of the Trustees, and on the resignation of the Rev. A. A. Miner, D.D., as

President of the College, he was elected as his successor, but declined to serve. Mr. Washburn was one of the few strongly marked characters of his time. A statesman, a social reformer, a philanthropist and Christian, earnest, positive, uncompromising, diligent and faithful in promulgating his opinions and discharging his trusts, he put the impress of his personality upon the most important movements of the age in which he lived. It would be impossible to write the history, either of his native state or the nation, during the last fifty years, without a recognition of his ideas and services. It is pleasant to remember that, among the many objects which claimed his attention and aroused his sympathies, this College held no second place in his affections. He watched its organization and development with an unflagging interest, and was never weary of any effort that might promote its progress. He also sought the development, by wise counsels and substantial aid, of those subordinate schools, which are directly tributary to the life of the College.

To fill the above vacancies the following persons have been chosen, namely:

William B. Bement,
Hon. Hosea W. Parker, and
Hon. William D. Washburn.

In the offices of instruction and government the following appointments are to be noted, namely:

William Leslie Hooper, A. M., Assistant Professor of Physics.

Arthur M. Comey, A. M., Assistant in Chemistry, and

Fred Stark Pearson, A.M.B., Walker Special Instructor, *vice* Jerome W. Klinghammer, A. M., whose term of office expired by limitation.

The appointment of the Assistant Professor of Physics is due to Henry B. Metcalf, Esq., whose continued liberality seems to find a fresh form of manifestation with every year.

Although many of the most important needs of the College are not met, yet a very decided and gratifying progress has been made.

Goddard Chapel was completed in the spring of the present year, and it was solemnly consecrated to religious uses in an impressive service, a very large congregation participating, on the 29th May. Both on this occasion and on Commencement Day the public had an opportunity to witness its complete adaptation to the ends proposed by the generous giver. It is graceful and majestic in its outline, satisfying in a marked degree to the sense of beauty, giving character and refinement to our entire group of buildings. It is strong and commodious also, and cannot fail to serve the religious needs of the College for many generations.

Among other gifts made during the year may be mentioned a bequest, amounting to ten thousand dollars, from Miss B. M. Blake, late of Kingston, N. H.

Provision has likewise been made by which the College is to have important additions to its facilities. The good health, as well as the contentment of the students, has long demanded a gymnasium. So much attention is given among young men, in almost every walk in life, to physical culture, that the possession of means for this object has become almost indispensable in an institution of learning which appeals to the public for patronage. I have sought to emphasize this need in every annual report that I have made thus far. It is very gratifying, therefore, to know that a friend, whose benefactions to the College are already numerous, has given a fund, not only for the erection, but for the maintenance and care of a gymnasium. The preparation of plans has been entrusted to Geo. A. Clough, architect, of Boston. The mason's work is already well advanced, and the building will doubtless be ready for occupancy in the early winter.

The one member of the Faculty of the College of Letters whose service has been uninterrupted from the opening of the College, in 1855, to the present time, is John P. Marshall, professor of natural history. During his connection with the College he has given instruction in many subjects. But natural history has always been his specialty. By diligence, patience, and personal self-denial, he has gradually made large and important collections, illustrating the different branches of his subject, which it has been impossible from lack alike of funds and room to display properly. To him, especially, among the many rejoicing friends of the institution, it will give supreme satisfaction, that a benefactor has been found to erect a building in which our present collections can be arranged and exhibited, and by means of which a new impulse may be given to the investigation of natural history in all its departments. A fund for care and maintenance is also to accompany this building. I should add that the most agreeable feature of this gift, is the intimation that it is only the beginning of a magnificent foundation, which, when it is completed, will render its donor and the College alike illustrious in that department of teaching and research. J. Ph. Rinn, A.M., has prepared a scheme for a group of buildings, the central portion of which is now in process of construction. It is hoped that the walls will be ready to receive the roof before the winter sets in.

The late John Wade, of Woburn, made to the College two important bequests, one of them in trust until it should reach a specified sum, and the other subject to a life-interest in behalf of a surviving friend. The corporation has made an arrangement with the trustee and the *cestuy que trust*, by which it has come into possession of both bequests. Measures have been instituted by which it is hoped that, from the united Wade funds, a sufficient income will be received, to pay, after discharging the annual obligation to the beneficiary for life under the will, the salary of at least one professor.

But, notwithstanding these financial gains, the needs of the College are manifold.

Our most important need is still for permanent funds, from the income of which we may pay our current expenses, and make such additions, from time to time, to the teaching force of the different departments as the best interests of learning require. This need can be met in three ways.

First, by the giving of money without restriction, other than that it shall be permanently invested and the income only used for such purposes as the Trustees in their wisdom may deem best. This form of gift, it is hardly necessary to remark, is not only the most desirable, but the most useful. The needs of an institution vary from generation to generation, and unless the Trustees can have liberty of choice their action is often seriously and sometimes hopelessly embarrassed.

Secondly, by making pecuniary provision for professorships that are already established, but unendowed. In every institution of learning certain professorships are indispensable to its life. The work cannot go on at all without them. In our College very few such professorships rest upon any special foundation. So that if any friend were desirous of being remembered and honored among the patrons and benefactors of learning, he might furnish the funds for the maintenance of one of these chairs. He would thus be sure, not only that his name would be preserved, but that so long as money, by prudent and careful management, could be made to yield an income, that professorship would endure.

Thirdly, by the endowment of professional schools. At the present moment no favor could be shown which would be so acceptable as the special endowment of the Divinity School. Not only the importance of the school, but the efficiency of its work, demands that it should be removed from its present somewhat inconvenient quarters, and placed in a building of its own. It ought also to have a separate fund of one hundred thousand dollars, which, in addition to the provision that has already been made for it, would soon render it independent of any present charge upon the funds of the College, and also provide for much needed expansion. Considering the vital relation which the school sustains to the varied constituency of the College, the wonder is that there are not many persons vying with each other for the privilege of rendering this service and achieving this honor.

There is room also for some person to put the cause of science under lasting obligation to himself by founding here a Scientific School. We have already many of the facilities for such a school; eminent specialists whose fame is world-wide, and working laboratories with much of the needed apparatus. Already the scientific work that is done here will bear favorable comparison with what is done in the best schools of the country. But we need a scientific building which will afford conveniences for performing the most delicate and difficult experiments in chemistry and physics, and suitable work-shops for the different departments of engineering. If we had these, with a fund sufficient to maintain and operate them, we could offer inducements to the young men who are in search of scientific training, unsurpassed on this continent.

A committee of the Trustees has been engaged for some months in considering the expediency of establishing a Medical School. Their investigations have gone so far as to prove that, with a very moderate endowment to begin with, a school could be opened which would have the co-operation and approval of many of the most eminent practitioners of the medical faculty in New England, and meet a want which is not now met by any other school. Undoubtedly such a department would be of positive advantage to the College.

Another committee has been charged with the duty of studying the question of opening the College to women. Serious and vital considerations are involved in this question. Many persons, not only those who have daughters to educate, but the friends of female education in general, are anxiously awaiting the result of the committee's deliberations. But whatever opinion may be held respecting the merits of the question, it appears to be the general view, both of the committee and of those with whom consultation has been held that, in the present condition of the College, before any step could be taken toward opening its doors to the other sex, it would be necessary that ample provision should be made for their separate lodging and oversight. As to the principle of co-education, there is a diversity view, not only among the Trustees, but in the Faculty of the College, and among our patrons and constituents. Nevertheless, the trend of public opinion appears to be, for the present at least, unmistakably towards co-education. Many of the most careful observers of the educational movements of our time are fully persuaded that it will not be many years before the most conservative institutions of the country will make no distinction of sex in their conditions of entrance. The provision which Columbia College has made for a course of study for girls, identical in the most important respects with that which is prescribed for boys, cannot be carried out logically, unless they are not only given a degree as the reward of their attainment, but accorded the same supervision and instruction. In a movement of such vast importance, there are those who think Tufts should lead rather than follow.

I am constrained once more to call attention to the Library. With a collection numbering twenty thousand bound volumes, besides many valuable pamphlets, it is exceedingly important that there should be, not only better facilities for handling them, but a fire-proof structure for their preservation. In addition to this the report of the Librarian calls attention to the need of a fund, from the income of which purchases may be made, from time to time, as the wants of those, both teachers and students, who have occasion to consult it, may require. Here is an opportunity for some friend to imitate the example of those who have made provision for the Gymnasium and the Museum of Natural History, and give the money which may be needed for the erection of a suitable building, and also for a fund for its proper support. What nobler service could any person, whom Providence has blessed with a superabundance of "this world's goods," render to the cause of human enlightenment than thus to place our Library upon an independent and permanent foundation.

The last Commencement afforded an opportunity to the friends of the College to perceive the wisdom of the plan of placing representatives of the different departments upon the platform. The exercises have gained greatly in quality, and in freshness and variety of interest by the process. Besides, it furnishes the public with a basis of judgment, as to the character and scope of our work.

It may be proper, in view of the recent discussion concerning the place of Greek in the college curriculum, to call renewed attention to the fact that for the past seven years a course of study has been open in this College in which the modern languages and some electives in science, are accepted as a substitute for Greek. The degree which is bestowed on the successful completion of this course is that of Bachelor of Philosophy. But it is put upon a plane of equality with the older degree, by opening the master's degree, to those who have taken it, on the same terms as to Bachelors of Arts.

In my report for 1875–76, I announced the establishment of the new course in language, substantially as follows: "After mature deliberation it has been determined to substitute a course of study, running parallel with that for which the degree of A. B. is given, embracing all the studies of the latter course, except Greek. The place of Greek is supplied mainly by the modern languages; and that the work in these may be carried further than it is usually pursued, an amount of preparation in French, equivalent to a year's work in the College, counting three recitations a week, is required for admission to the course. A crying reproach of American college education is thus removed; namely, that so little of practical value to the student, is now done with the living languages of continental Europe, especially with the languages of the two leading nations, France and Germany, which may be said to divide with the English race, almost the entire realm of letters. It cannot be otherwise than a ground of complaint with the repositories of learning in this country that so few, even among the educated classes, have a speaking acquaintance with French and German, or are able to read in those tongues, with pleasure and profit. The growing intercourse of Americans with foreigners, not to speak of the imperative demands of high official stations, which must continue to be filled, in the future as in the past, by persons of education, would seem to demand a higher degree of attainment in those branches than has hitherto been possible with such facilities as most colleges and universities afford." This language acquires new force in the light of the discussions now going on. I am bound to confess, however, that our experience of the last seven years does not give us unbounded confidence in any very sweeping modification of the old college curriculum. We have had some men of exceptional brilliancy who have taken the new course. But as a rule, those who have sought it have not shown either the facility in linguistic studies, or the mental grip in dealing with other subjects, which those who take the other course generally exhibit. This may be due either to the difference of the preparatory drill, or to the fact that only the better sort of scholars have the courage to undertake the more extended study of the dead languages. In all this discussion, however, it is not wise to lose sight of the real object of a college education. It is not to fill the mind with facts or principles of a practical kind which will enable the graduate to get his daily bread in any calling to which he may turn his hand. Such education belongs wholly to the professional and technical schools. The object of the college is to produce men disciplined and trained to take up and carry forward with success the investigation of truth or knowledge in any direction in which their tastes may lead or their duty compel them. The question, therefore, of the best method to be pursued in education, cannot be determined by an appeal to popular prejudice, but it must be learned through the observation of teachers and the experience of scholars.

The whole number of students admitted to the College during the year is thirty-five. They are distributed as follows: -

| | |
|---|---|
| Freshman Class, | 19 |
| Sophomore Class, | 1 |
| Junior Class, | 1 |
| Senior Class, | 1 |
| Engineering Department, | 5 |
| Special Student, | 1 |
| Divinity School, | 7 |
| Total, | 35 |

The whole number of degrees given in course at the last Commencement was twenty, as follows:—

| | |
|---|---|
| Bachelor of Arts, | 10 |
| " of Divinity, | 5 |
| " of Civil Engineering, | 3 |
| Master of Arts, | 2 |
| Total, | 20 |

The whole number of students in the College, in all departments, is one hundred. They are distributed as follows:—

| | |
|---|---|
| Undergraduates, | 72 |
| Divinity School, | 21 |
| Graduates, | 7 |
| Total, | 100 |

Besides a brief statement of the work performed in each department, a table is appended hereto which will give the names of instructors, the subjects of instruction, the nature and amount of the work, the text-books used, the number of pupils in each class, and the number of recitation hours.

In the department of Latin, besides the required work with the freshmen and sophomores, the following electives were taken. One senior for the first half-year read selections from the Satires of Juvenal. Two juniors read Cicero's Cato Major and one book of Tusculans. A course of lectures was also given to the freshmen in the history of the Latin language and literature, besides a few illustrated lectures on Roman antiquities.

In the department of Greek, besides the regular work with freshmen six times a week for the first half-year, and five times a week for the second half-year, and with the sophomores four times a week for the first half-year, one sophomore took an extra elective three times a week in the second half-year, and one senior a regular elective twice a week for the first half-year.

The work in the Mathematical department has been essentially the same as for the three previous years. Text-books have been changed, but the subjects taught have been given in the same order and to about the same extent as formerly. As there has been a marked increase of late in the amount taught in the fitting schools, it is hoped that in a few years we shall have all freshmen so well prepared to the limits of our requirements, that the class will be able to complete during the first year the whole of the work contemplated by the department. With the Walker Special Instructor seven sophomores and one engineer elected advanced geometry, four times a week, for nearly the whole of the first half-year, and did satisfactory work.

In the department of Physics the required work is a year's study of physics by the juniors, the class meeting the professor four times a week for the first half-year, and three times a week for the second half-year. Six weeks are also devoted to astronomy by the same class. In the elective work of this department, two seniors and seven juniors had laboratory practice throughout the year. Two seniors also had theoretical physics for the year. The professor, besides his work on the academic side of the College, gave a course of twelve lectures to the Divinity School on molecular physics, the object being to make plain how far physical laws have been discovered in matter, what classes of phenomena can be predicted, and to show, as clearly as possible in the time, the nature of the various forms of energy, as heat, electricity, etc. In view of the recent industrial developments in electrical science, a demand has arisen for instruction in that branch, which the department has met by organizing a course in theoretical and applied electricity, such as will fit a student to enter upon business of that kind in an intelligent and practical manner. The assistant professor will have special charge of this work.

In the department of Chemistry the instruction given to the junior class for the first half-year consisted of a course of lectures in inorganic chemistry and frequent written examinations. As far as is possible in a course of lectures the science was taught by deducing the principal laws from experiments performed in presence of the class. During the second half-year a similar course in organic chemistry was given to six students. In the laboratory practical work in all the different departments of chemistry was carried out. The equipment of the chemical laboratory for advanced work in chemistry has been recently enlarged, especially for original investigation in organic chemistry. During the year thirteen investigations on subjects relating to organic chemistry were worked out in the laboratory, and were published in the American Journal of Chemistry.

In the department of Natural History the interest shown by the several classes in the regular studies of the course, was fully equal to that of any previous year. One student elected biology during the first half-year. The elective class in mineralogy for the second half-year was composed of five engineers, one senior and two graduate students. Three prizes were awarded for superior attainments in mineralogy.

The mineralogical collection has been enriched by a number of unique specimens of stalactitic pyrite, galena and calcite, the gift of J. S. Dennis, of Chicago. This gentleman has been one of the most liberal benefactors of the museum, having contributed, in its early days, a fine collection of coins, and many minerals which are at present among the most interesting treasures in the possession of the College. Dr. John Alexander, of Belmont, has added to his former gifts a fine collection of perfect quartz crystals. Important and valuable contributions to different branches of the museum have been made by the professor and by both graduates and under-graduates. Mr. J. S. Kingsley, of Melrose, has given a large collection of insects, which for want of room, has not yet been removed from the cases in which it was originally packed. These and many other treasures, now hidden in boxes and drawers, are waiting to grace the rooms of the new Museum. This building will contain abundant room for the better exhibition and preservation of the present valuable collections of natural history, and will furnish facilities for the prosecution of biological and mineralogical research. To the generous and far-sighted donor, whose wisely directed munificence brings timely relief to this important department, the gratitude of every friend of the College is due. May his life be prolonged far beyond the period required to carry out his plans for the accommodation and enlargement of the natural history collection.

In the department of Engineering the third class had mechanics two hours a week, engineering three hours a week, railroads three hours a week, and drafting six hours a week, for the first half-year. The first class had descriptive geometry four hours a week, surveying three hours a week, and drafting six hours a week. During the second half-year the third class had four hours a week in mechanics, four hours a week in bridges, and six hours a week in drafting. The sophomores also received instruction three times a week in mechanics. The department calls attention to the increased interest of the students in the preparation of their graduating theses, which is undoubtedly due to the representation of the department in the programme of speaking for Commencement.

In the department of Modern Languages the juniors had German during the first half-year and four members of the class continued the study during the second half-year. The advanced class in German for the first half-year, was composed of two philosophical students, one senior, and one divinity student. The sophomores began French at the mid-year. The freshmen of the philosophical course had French throughout the year, three and four hours a week, respectively, during the two half-years. In the latter course, as I have already said, French is accepted as the equivalent of Greek, in the requirements for admission. The ordinary freshman is held to the performance of work of a more advanced character than that of the fitting course. Experience shows that freshmen of the philosophical course are so greatly deficient in French that they are disqualified from pursuing the work that was laid down for them when the course was established. For the past two years, it has been found necessary to place these men in a class by themselves, and proceed very much as if the study was new to them. The class thus falls far short both as regards the quantity and character of the work, of what was presupposed in making the two courses equivalent. The difficulty was not unforseen when the course was established, and can only be overcome by rigid adherence to our standard of admission.

The department of Oratory reports an increased interest on the part of the students. Although no student is under compulsion to present an oration or give a reading before the assembled classes, the lists are always full of those who are ready to occupy the hour given to public speaking. From year to year an increasing number of freshmen have taken part in these public exercises, and this year more than half the class did so without solicitation. Three things are required of students who present themselves for speaking or reading:

1. That they shall make a thorough analysis of the thought and feeling of their author, and decide upon the forms of voice and action by which they will present him.
2. That they shall present themselves to the professor for at least two drills before they appear before the class.
3. That no inferior work shall be done.

Six seniors and seven juniors took the elective in oratory. The work consisted of a review, by topics, of a course of lectures on the philosophy of expression, as taught by Delsarte, of the analysis and reading of Julius Cæsar, and of the presentation of readings from other authors. The department reports an increase of interest in the subject of oratory by the divinity students. The professor has met them twice a week for the half-year, instead of once a week, as formerly. A summer school, under the auspices of the department, was conducted during the month of July. It opened with an enrollment of seventeen members and closed with twenty-seven.

In the department of Rhetoric, Logic and English Literature, the only change during the year worth noting has been the substitution of intellectual philosophy for logic in the second half of junior year. This change has been made chiefly with a view to encourage elective work in philosophy, which can now be pursued with profit through the senior year. In the natural order of studies, also, it would seem that psychology should precede logic and ethics, instead of following both as heretofore. As the change did not affect the order of senior studies, it is as yet too early to say what practical advantages will result.

During the first half-year twelve sophomores and five freshmen read Hill's Rhetoric, reciting four times a week. Themes were written in connection with this study, and continued in the second half-year, to the number of six in all. In elective work six seniors read English authors, of the period 1780–1880, with oral and frequent written criticisms by members of the class. The class met three times a week. The analytical study of American oratory, chiefly in connection with the study of our political history, was pursued by one senior and six juniors, three hours a week. Extra work with individuals occupied several hours a week, and theme work by juniors and seniors was begun.

During the second half-year theme work of all classes, except the freshmen, was continued, and other studies were as follows:

1. Required. *a.* Seniors, intellectual philosophy, reading President Porter's larger treatise, three hours a week; *b.* juniors the same, but using the abridgment, four hours a week.

2. Optional. Nine juniors read selections from English authors, from 1580 to 1 80, four hours a week.

3. Elective. *a.* Seven seniors read selections from American authors of the present century, three hours a week; *b.* three juniors read select speeches of eminent British orators, two hours a week.

The multiplicity of work in this department is so great as to make the best results impossible. Practically, at least three departments are embraced in one: rhetoric and composition, intellectual philosophy and logic, English literature. Even at this the study of American political oratory, as illustrating our constitutional and political history, is hardly provided for. The difficulty complained of does not come so much from over-requirement in hours of class work as from distraction among so many important subjects. It is hardly possible to avoid making one subject this term and another the next, the leading interest at the expense of the remainder.

The President of the College gave instruction to the seniors four hours a week for the year. ethics formed the subject during the first half-year and political economy during the second half-year. Six seniors also took the elective in law three hours a week for the year. The two branches of the subject pursued were ancient law and international law. The class was deeply interested in the subject, and very satisfactory work was accomplished.

The report of the Librarian shows an addition of four hundred and ninety-six voumes during the year, making the whole number nineteen thousand six hundred and twenty-two. Only forty-three volumes have been purchased, and of these thirty are from the income of the Joy Fund; sixty-two volumes have been added by binding; three hundred and ninety-six have been added by donation; and one by exchange.

No changes of importance have taken place during the year in the administration of the library. The books are well cared for, easily accessible to students and others, and subject to no regulations that operate to restrict their use. Many books, especially English classics, are largely used in connection with class work, and are rapidly worn. The need of them is so great, however, that it has been thought best to allow such use to continue. If several copies each of a considerable list of books most in demand for such use, could be provided, the library would be much more helpful to students. Classes in English literature read selections from perhaps thirty to fifty different authors, of which there is commonly but a single copy in the library. If even two or three hundred volumes, properly selected, could be provided with a view to such use, it would promote studies that are receiving increased attention.

It may not be out of place to raise the question whether the office of librarian as at present constituted should not be abolished. The form of an annual report, and an occasional signature, comprise all the results that appear. It is suggested that the acting librarian be made librarian in full. The change would simplify matters of detail, and would be only a proper recognition of the admirable service, so long rendered by one who has been officially unknown in the practical discharge of all a librarian's duties.

ELMER H. CAPEN.

*Tufts College, Sept. 18, 1883.*

## PRESCRIBED STUDIES (SENIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| President Capen. | Pol. Economy.<br>Ethics. | Fawcett's, with Lectures.<br>Calderwood's. | 10 cl. | 4 for ½ year.<br>4 for ½ year. |
| Prof. Marshall. | Zoology.<br>Geology. | Nicholson's, with Lectures.<br>Dana's, with Lectures. | 9 cl. 1 ph.<br>10 cl. 1 ph. | 4 for ⅛ year.<br>4 for ⅜ year. |
| Prof. Shipman. | Psychology.<br>Rhetoric. | Porter's Human Intellect, to Part IV.<br>Six Themes. | 9 cl. 1 ph. | 4 for ½ year. |
| Prof. Bray. | App. Mechanics. | Rankine's; Weisbach's; Wood's. | 3 eng. i. | 2 for ½ year.<br>3 for ½ year. |
| | Civil Engineering. | Mahan's; Burr's Bridges and Roofs. | | 3 for ½ year.<br>5 for ½ year. |
| | Roads&Railroads. | Gillespie's and Henck's. | | 3 for ½ year. |
| | Drawing & Field Work. | | | 6 for year. |

## PRESCRIBED STUDIES (JUNIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Marshall. | Botany.<br>Zoology. | Gray's Lessons and Manual, with Lectures.<br>Nicholson's. | 12 cl. 2 ph. | 4 for ¼ year.<br>4 for ¼ year. |
| Prof. B. G. Brown. | Calculus. | Byerly's Integral Calculus. | 3 eng. iii. | 3 for year. |
| Prof. Shipman. | Psychology.<br>Rhetoric.<br>Eng. Lit. | Porter's Intellectual Science.<br>Six Themes.<br>British Authors (1580–1780) (*optional with Chemistry*). | 12 cl. 2 ph.<br>7 cl. 2 ph. | 3 for ½ year.<br>4 for ½ year. |
| Prof. Dolbear. | Physics.<br>Astronomy. | Olmsted's College Philosophy.<br>Newcomb and Holden's. | 12 cl. 2 ph. | 4 for ½ year.<br>3 for ½ year. |
| Prof. Fay. | German. | Theoretical Grammar in Lectures; Macmillan's (Fasnacht's) Grammar, Parts I. and II.; Spielhagen, Clara Vere, 40 pp. | 11 cl. 1 ph. | 6 for ½ year. |
| Prof. Michael. | Chemistry. | Inorganic Chemistry, Lectures.<br>Organic Chemistry, Lectures (*optional with Eng. Lit.*). | 12 cl. 2 ph.<br>6 | 3 for ½ year.<br>4 for ½ year. |

## PRESCRIBED STUDIES (SOPHOMORE YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Marshall. | Physiology. | Huxley and Youmans's, with Lectures (*optional with Greek.*) | 12 cl. 1 ph. | 3 for ½ year. |
| Prof. Schneider. | Greek. | Euripides, Medea; Reading at sight; Greek Composition. | 12 cl. | 4 for ½ year. |
| Prof. Dearborn. | Latin. | Horace, Satires, Book I.; Cicero, Lælius; Tacitus, Germ. and Agr.<br>Translation of English into Latin. | 12 cl. 1 ph. | 3 for year.<br>1 for ½ year. |
| Prof. B. G. Brown. | Mathematics. | Briggs's Analytic Geometry. | 12 cl. 1 ph. | 4 for ½ year. |
| Prof. Shipman. | Rhetoric. | A. S. Hill's; Six Themes. | 12 cl. 5 ph. | 4 for ½ year. |
| Prof. M. T. Brown. | Oratory. | Lectures; Declamations. | 12 cl. 1 ph. | 2 for ½ year. |
| Prof. Fay. | French.<br>(1st div.)<br>(2d div.) | Brachet's Elementary Grammar.<br>Mérimée, Columba; Racine, Athalie.<br>Mérimée, Columba. | 12 cl. 1 ph. 3 eng. | 6 for ½ year. |
| Prof. Bray. | Mechanics. | Magnus's. | 12 cl. 1 ph.<br>3 eng. 1 sp. | 3 for ½ year. |
| Mr. Klinghammer. | Mathematics. | Olney's Advanced Geometry. | 7 cl. | 4 for ½ year. |

## PRESCRIBED STUDIES (FRESHMAN YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Schneider. | Greek. | Xenophon, Memorabilia; Plato, Apology and Crito.<br>Homer, Odyssey, Books X., XI., XII.; Reading at sight; Greek Composition. | 15 cl. | 6 for ½ year.<br>4 for ½ year. |
| Prof. Dearborn. | Latin. | Livy, Book XXI.; Cicero, Cato Major; Horace, Odes, Books I.–III. | 15 cl. 4 ph. | 3 for year. |
| | | Harkness's Latin Composition, Part III.; Extempore exercises. | | 1 for year. |
| | | Roman History, Liddell, Rawlinson's Manual. | | 1 for year. |
| | | Roman Antiquities, Ramsay. | | 1 for year. |
| | | Lectures on the History of the Latin Language and Literature. | | |
| Prof. B. G. Brown. | Mathematics. | Wentworth's Algebra; Wentworth's Solid and Spherical Geometry; Wentworth's Trigonom. | 17 cl. 2 ph. 3 eng. | 4 for year. |
| Prof. M. T. Brown. | Oratory. | Declamation; Lectures. | 15 cl. 4 ph. | 2 for ½ year. |
| Prof. Fay. | French. | Macmillan's (Fasnacht's) Grammar, Part III.; Lacombe, Petite Histoire du Peuple Français; Racine, Athalie. | 4 ph. | 3 for ½ year.<br>4 for ½ year. |
| Prof. Bray. | Engineering. | Descriptive Geometry, Church. | 4 eng. i. | 4 for ½ year.<br>2 for ½ year. |
| | | Surveying, Murray's. | | 3 for ½ year. |
| | | Drafting. | | 4 for ½ year.<br>2 for ½ year. |

## ELECTIVE STUDIES.

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Pres. Capen. | Law. | Maine's Ancient Law. | 5 seniors. | 3 for ½ year. |
| | | Wolsey's International Law. | 6 seniors. | 3 for ½ year. |
| Prof. Marshall. | Mineralogy. | Dana's; Platner's Blow-pipe Analysis, Laboratory Work. | 1 g. 1 ph. 2 sp. 2 eng. | 3 for ½ year. |
| | Biology.<br>Zoology.<br>Botany. | Huxley and Martin's,<br>Packard's,<br>Bessie's and Sach's, Laboratory Work. | 1 senior. | 3 for ½ year. |
| Prof. Schneider. | Greek. | Sophocles, Œdipus Tyrannus; Aristophanes, Nubes. | 1 senior. | 2 for ½ year. |
| Prof. Dearborn. | Latin. | Plautus, Menæchmi; Selections from Juvenal. | 1 senior. | 3 for ½ year. |
| | | Cicero, Cato Major, Tusculans. | 2 juniors. | 3 for ½ year. |
| Prof. B. G. Brown. | Calculus. | Byerly's Differential and Integral Calculus. | 2 juniors. | 3 for year. |
| Prof. Shipman. | Rhetoric. | American Oratory. | 1 sen. 6 jun. | 3 for ½ year. |
| | | British Oratory. | 3 juniors. | 2 for ½ year. |
| | Eng. Lit. | British Authors (1780–1880). | 6 seniors. | 3 for ½ year. |
| | | American Authors (1780–1880). | 7 seniors. | 3 for ½ year. |
| Prof. Dolbear. | Physics. | Electricity, Practical Work in the Laboratory. | 2 seniors,<br>~~2~~ 9 juniors.<br>1 junior. | 3 for year.<br>2½ for year.<br>3 ~~2~~ for ½ year. |
| Prof. M. T. Brown. | Oratory. | Special Drill in Reading and Declamation. | 7 seniors.<br>7 juniors. | 3 for ½ year.<br>2 for ½ year. |

ELECTIVE STUDIES (CONTINUED.)

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* | *Hours per Week.* |
|---|---|---|---|---|
| Prof. Fay. | German. | Schiller, Die Jungfrau von Orleans.<br>Goethe, Hermann und Dorothea; Schiller, Maria Stuart (2 acts). | 1 sen. 2 ph. 1 th.<br>4 jun. 1 ph. | 3 for ½ year.<br>3 for ½ year. |
| Prof. Michael. | Chemistry. | Organic Chemistry,<br>Inorganic Chemistry,<br>Quantitative Analysis,<br>Qualitative Analysis, } Laboratory Work. | 1 eng.<br>1 soph.<br>1 jun. 1 g.<br>1 sen. 2 jun. 2 eng | 3 for ½ year.<br>3 for ½ year.<br>3 for year. |

NOTE.—cl. denotes classical students; ph., philosophical; th., theological; sp., special; g., graduates; eng., engineers. The Roman numeral after eng. denotes the class. Three hours of laboratory work in Chemistry and two in Natural Science and Physics are construed as one in the schedule.

# THE DIVINITY SCHOOL.

*To the President*:

In accordance with the requirements I respectfully submit the following report of the condition and work of the Divinity School for the year ending June 1883.

At the beginning of the year the number of students present was nineteen, distributed in the several classes as follows: senior, six; junior, five; and the two under classes four each. About the middle of the year two members were added to the freshmen, making the whole number for the year twenty-one. But I regret to say that the Faculty found it necessary to dismiss one member of the third class, on account of repeated and persistent violations of the rules of the school and for other conduct unbecoming a theological student; and another, a member of the junior class, was at much the same time dismissed at his own request.

This left the number of students the same at the close as at the beginning of the year.

Five young gentlemen having honorably acquitted themselves through their four years course of study, and passed their examinations in a manner satisfactory to the Faculty graduated at the last commencement and received the degree of Bachelor of Divinity. Believing, however, that this degree carried a broader implication than mere intellectual attainment, the Faculty felt constrained to withhold their recommendation of one student who had recently developed a phase of rationalism so pronounced as in their opinion to deny all revealed religion, and all the claims of historic Christianity. The five students who graduated with the honors of the institution are already settled over parishes within the limits of Massachusetts. I will only add that one of them having taken charge of a small parish near the College proposes in connection with parish work to pursue the regular course of classical and scientific study, and thus in due time to earn the degrees of Bachelor and Master of Arts.

In this purpose the Faculty has encouraged him, under the conviction that larger attainments and a wider and more varied culture could not fail to increase his power and add to his usefulness. We only wish it were practicable for this school to demand at once a college education, or its full equivalent in mental discipline, preparatory to entering its halls and engaging in its studies. Observation shows as might reasonably be expected, that seven years study is better than four and the Universalist denomination would find its interests greatly subserved if it should carefully see to it that the great mass of its clergy first enjoyed a broad and thorough training in college. By this do not understand me as speaking in derogation of the work of our theological schools. They have done and are doing the church and the cause for which it stands an immeasurable service. They have raised the standard of pulpit and parochial labor amongst us, and will no doubt continue with increasing age and facilities to do more and more in every useful direction, but it is obvious that no merely professional education, however thorough, can accomplish for a young man all that he would reach by means of a larger and more varied preparatory course, such as our colleges are designed to give.

If all young men designing to enter the ministry could fully appreciate the advantages a college education would give them in their theological studies, and in the subsequent position and power it generally confers they would allow no ordinary obstacles to prevent its attainment.

The work of the school, though in part performed under quite exceptional circumstances was, after all, well done. During the first half of the year the whole Faculty was present and the class room work went on in its usual way. About the beginning of the second half Professor Tousey under the direction of his physician sought a milder climate in Florida. But he had in good part, prepared for this absence, having already done by extra hours perhaps four-fifths of his year's work, and secured the services of Professor Knight to perform what remained, so that his classes had no reason to complain. Unfortunately at about the same time I was myself suddenly wholly incapacitated for labor by an inflammation of the retina of the eyes which left me unable either to read or write. I could not even see the lines in ordinary print, much less distinguish single letters. I found that any earnest continuous thought aggravated the difficulty. Under these circumstances the whole burden of the school fell upon the shoulders of Professors Leonard and Knight. Only two or three studies were dropped and those the least important and most easily made up in aftertime. In Comparative Theology, Exegesis and Hermeneutics, Professor Leonard took charge of the upper classes, to the great satisfaction of the students. Professor Knight supplemented his work in other classes. Mr. White of the senior class very kindly took charge of the German classes. Small as the working force appeared, the work was well performed, and I am under great obligations to my associates, and to Mr. White, who so generously and at so much personal sacrifice, made good my place in the school.

I cannot omit to mention the great aid the school received from without as well as from within. Several courses of lectures, more than we ever enjoyed before, fortunately combined to fill up any gaps and supply every deficiency in the regular work.

Professor Dolbear very generously gave the whole school a course of twelve lectures on molecular physics. Then came a course of four lectures by the Rev. E. C. Bolles, D.D., on the relations of science and the Christian religion. Meanwhile the Rev. Richard Eddy, D.D., favored the school with a course of five or six lectures on the early history of Universalism in this country. Finally the Rev. A. A. Miner, D.D. gave four lectures on the ethical aspects of the various doctrines of the churches about us.

The Rev. H. W. Rugg had also promised a few lectures bu ill health prevented him from delivering them.

I hardly need say how interesting and useful these lecture were, and I am glad to acknowledge our great obligations t the gentlemen above-named for their services in our behalf.

For a more special account of our work, I refer to the accompanying tables.

In conclusion I beg to call your attention to the needs of this department of the College. A suitable edifice for its accommodation is a necessity which I hope will soon attract the attention of some generous donor and find a satisfactory response. It greatly needs also a good theological library and a moderate fund for the purchase of current theological literature in the future. But above all and perhaps before all other necessities is that of a fund sufficient to maintain this department in a condition of absolute independence of all present college funds. Except what is provided for by the will of Mr. Packard, we need two hundred and fifty thousand dollars to make the school what it should be. God grant that the day of its realization may not be long deferred. If I have a single earthly wish, it is to live to see the school handsomely conditioned, with adequate funds for its support, in a suitable hall, and with a library large enough to meet all its needs.

Respectfully submitted.

THOMAS J. SAWYER,

*Dean of the Faculty.*

## FIRST YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Archæology. | Jahn's, Part I. | 2 for ½ year. |
| | Old Testament Introduction. | Keil's, Vol. I. | 2 for ½ year. |
| | German. | Ahn's Grammar, Part I. | 2 for ½ year. |
| Prof. Tousey. | Logic. | Bain's Deductive Logic. | 2 for ½ year. |
| **Mr. Knight.** | Rhetoric. | A. S. Hill's; Spencer's Philosophy of Style; Analysis of Selections; Eight Themes. | 3 for year. |
| | Greek. | Cary's Introduction to New Testament Greek; 5 Chaps. of St. John's Gospel. | 3 for year. |
| | New Test. History. | Maclear's; Gardiner's English Harmony; Lectures. | 2 for year. |

## SECOND YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | German. | Schiller's Wilhelm Tell. | 2 for ½ year. |
| | Introduction New Testament. | Bleek's, Vol. I. | 2 for ½ year. |
| Prof. Leonard. | Homiletics. | Phelps, and Hoppin; Analysis of Sermons; Homiletical Analysis of portions of the Gospels. | 2 for ½ year. |
| | Hermeneutics. | Studies in Immer, with Notes upon Texts. | 2 for ½ year. |
| Prof. Tousey. | Psychology. | Porter's Mental Science; Hamilton's Metaphysics; Masson's British Philosophy; Themes. | 2 for ½ year.<br>3 for ½ year. |
| | Logic. | Bain's Inductive Logic. | 2 for ½ year. |
| Mr. Knight. | Church History. | Hase's, to the Third Period; Hagenbach's History of Doctrines, to the Third Period. | 2 for ½ year.<br>3 for ½ year. |

## THIRD YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Theology. | Lectures. | 2 for ½ year. |
| | Exegesis. | Select portions of N. T.—especially whatever is employed as proof texts of endless punishment. | 2 for ½ year. |
| Prof. Leonard. | Homiletics. | Homiletical analysis of portions of the Acts and the Epistles; Plans; Composition and Delivery of Sermons; Criticisms, public and private. | 2 for year. |
| | Exegesis. | Linguistic Peculiarities of the New Testament Writers. | 2 for ½ year. |
| | Theology. | Studies in Dorner and Oosterzee; Lectures. | 2 for ½ year. |
| | Christian Evidences. | Row's Christian Evidences in view of Modern Thought; Lectures; Studies in Rawlinson, Dr. Young, Prof. Rogers. | 2 for year. |
| Prof. Tousey. | Ethics. | Calderwood's Moral Philosophy; Bascom's Ethics; Themes. | 4 for ½ year. |
| Mr. Knight. | Hist'ry of Doctrines. | Hagenbach's, with Lectures. | 2 for ½ year. |

## FOURTH YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Comp. Theology. | Hardwick's Christ and other Masters, to Part III. | 2 for ½ year. |
| Prof. Leonard. | Homiletics. | Written Analysis of Printed Sermons; Studies in plans of Sermons; Composition and Delivery of Sermons; Criticisms, public and private. | 2 for year. |
| | Church Polity. | Polity of the New Testament; Polity of Special Churches; Polity of Universalist Church. | 2 for ½ year. |
| | Pastoral Theology. | Studies in Hoppin and Vinet; Notes on the basis of Van Oosterzee; Lectures. | 2 for ½ year. |
| | Comp. Theology. | Lectures on the Non-Christian Systems, comparing and contrasting them with Christianity. | 2 for ½ year. |
| Prof. Tousey. | Natural Theology. | Paley's; Flint's Theism; Butler's Analogy; Flint's Anti-Theistic Theories; Themes; Lectures and Readings. | 5 for ½ year. |

## ELECTIVES, Etc.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Homelitics. | Studies in Sermon-literature with special reference to Material, Method and Style. | 2 for ½ year. |
| Dr. Miner. | | Four Lectures on The Ethics of Doctrine. | |
| Dr. Bolles. | | Four Lectures on The Need and Value of Science to the Minister. | |
| Rev. R. Eddy. | | Four Lectures on The Beginning and Progress of the Universalist Church. | |
| Prof. Dolbear. | | Twelve Lectures on Molecular Physics. | |

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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

1883-84.

THE LIBRARY
OF THE
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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

1883-84.

BOSTON:
PRINTED BY WALLACE SPOONER,
17 PROVINCE STREET,
1884.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen:*

The President of the College has the honor to submit the following report for the academic year 1883–84; namely, from September 19, 1883, to September 18, 1884.

The corporation has remained unchanged during the year. There have been no deaths and no resignations. Neither are there any vacancies upon the board, the number of members being fully up to the limit of the charter.

At the beginning of the year

FRED STARK PEARSON

was appointed Walker Special Instructor, in the place of

JEROME W. KLINGHAMMER,

whose term of office had expired by limitation.

GEORGE M. PALMER

was appointed Assistant in Chemistry.

GEORGE M. HARMON

was elected Assistant Professor of Theology in the Divinity School.

HELEN MELLEN

was chosen Librarian to succeed

WILLIAM R. SHIPMAN,

who resigned his office. For many years Miss Mellen has performed the duties of the office faithfully and acceptably. By long experience she has acquired a perfect familiarity with the details of a librarian's work. She is therefore eminently fitted for the position, and her election is not only an act of justice to her, but it will undoubtedly prove advantageous to the Library.

The condition of the College was never more encouraging and hopeful than now. The recent gifts it has received are an inspiration to all its friends. Their stimulating effect is especially seen among the teachers and students. The buildings recently erected have not only added to the beauty and attractiveness of the campus, but have greatly increased our facilities for effective work. Goddard Chapel came into daily use at the beginning of this year. The character of morning devotions has been completely changed by having an appropriate room specially devoted to them, while our Sunday service, instead of being an irksome task, performed only upon compulsion, seems to be regarded as a happy privilege.

In my last report I was permitted to announce a Natural History Museum, as the gift of an unknown benefactor. About three months ago the injunctions of secrecy were removed, so that at the Commencement I could proclaim it as the generous benefaction of the Honorable P. T. Barnum. The building is now nearly completed. It is a structure of dignity and beauty, making an imposing and attractive feature in our group of buildings. The first, or basement floor, which is almost wholly above ground, will be occupied mainly by the necessary laboratories and workrooms. The second, or main floor, will have, besides a large lecture-room, a grand vestibule, containing a marble bust of the donor, by Thomas Ball, and the larger and more important specimens in natural history now belonging to the College. The third floor comprises a large exhibition hall, fifty feet wide and seventy feet long, with a gallery running completely around it. In addition to the important cabinet already in our possession, Mr. Barnum authorized Professor Henry A. Ward, of Rochester, to furnish a fine zoological collection. This collection, comprising several hundred choice specimens, selected with special reference to purposes of instruction, has been received and will be ready for mounting as soon as cases can be provided.

A year ago I also announced that provision had been made for the erection of a Gymnasium, an instrumentality which has long been regarded as among the most pressing needs of the College. But not until Commencement was I permitted to declare publicly that this donation is due to the generosity of Mrs. Mary T. Goddard, who has placed the friends of the College under renewed obligations to herself by this evidence of her abiding interest in the institution. This building was completed in June. The main hall, a room ninety feet long by forty-five feet wide, was used for the Commencement dinner, and proved to be admirably adapted to that purpose. The building has been fitted up under the direction of Dr. D. A. Sargent, of Cambridge, with the necessary apparatus and appliances of a gymnasium, and will be ready for use at the opening of the next college year.

Important alterations have been made during the vacation in the main college building. These alterations have been rendered necessary chiefly on account of the growing demands of the department of chemistry. With the exception of the room occupied by the Professor of Latin, the entire first floor of this building is now devoted to chemistry. Besides the working laboratory and lecture-room of the Professor, two other rooms are now fitted up for original work in organic chemistry. The removal of the department of natural history, together with the cabinet, from this building to the Barnum Museum, gives space for further developments in the departments of physics and civil engineering.

These changes, and added facilities, only serve to emphasize the growing needs of the College in other respects. There are still three things imperatively necessary to the complete and successful working of the institution; and although I have repeatedly mentioned them in previous reports, I feel constrained to call attention to them again by way of reminder.

1. Foremost among these needs is the building of a divinity hall and the specific endowment of the Divinity School. This work becomes more urgent with every passing year, and ought not longer to be delayed. Indeed, when we consider the important service which the school is rendering to the Christian Church and the ministerial profession, it is really a surprise that the friends of religion have not long ere this performed this service. In no more honorable way could the name of a devout layman be carried to posterity than by providing the funds for this purpose, and thus becoming associated forever with its work as its friend and principal founder.

2. Next in importance to the endowment of the Divinity School, and scarcely less urgent, is the requisite means for the establishment of a Scientific School. This has become almost a necessity, on account of the growth which has been going on in the different departments of science connected with the College during the last four or five years.* The number of young men turning to us for special scientific instruction is constantly increasing. With proper facilities the College could be very useful to a considerable class of persons whom the other scientific schools in this neighborhood cannot serve. To answer the demand that is now made upon us, we should have a suitable building and the means to employ two or

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* Of the class entering next year, eighteen have been admitted regularly to the engineering department. There will also be six special students pursuing scientific courses.

three additional teachers. Opportunity would thus be given, with the teaching force we already have, to teach science with a view to its application to industry and the arts, and also to conduct and carry forward research, so as to enlarge and widen the boundaries of scientific knowledge. A sufficient sum to secure these objects would connect the name of the donor with the scientific school forever.

3. The needs of the Library do not diminish, but rather increase year by year. Our present collection of books is important and valuable. It is impossible to handle it advantageously in its present cramped and inconvenient quarters. Situated as it is, moreover, in the upper story of the main building, in case of fire, nothing could prevent it from being totally destroyed. It ought to be removed at once from its present quarters and placed in a safe building, specially adapted to its use. Then, too, there should be a fund sufficient for the purchase of books as they are needed by the different departments of work in the College, as well as for the general and miscellaneous purposes of the students. The income of the Joy Fund is increasing, and will soon be capable of rendering good service within certain specified limits. But there is need of a much larger sum for immediate, constant and unrestricted outlay. I am not without hope that some one will soon be found to do what is so greatly needed for what may be regarded as the central and vital element in the life of the College.

These do not by any means exhaust the departments in which benefactions would be welcome and useful.

For example, we have need of a good working telescope, properly set and mounted. If the number of students should continue to increase, as they now seem likely to do, a new dormitory will soon become a necessity. An endowment for a Medical School, for which there is now a strong call, would be gratefully received. I should not omit to mention the need of provision for opening the College to women. A portion of our constituency is insisting that it is the duty of the trustees to afford the same facilities for education to young women as to young men. The reply we make is that the College was founded, it may have been wrongfully, for the purpose of giving instruction exclusively to young men. All its arrangements have been made with this end in view. It is impossible to change the policy of the College in this respect without a large expenditure of money. Young women could not be received and cared for here without a building specially constructed for their use and without suitable oversight. One hundred thousand dollars is certainly needed to do this work with dignity and decency. The friends of co-education, therefore, ought not to complain that the doors of the College are closed against women, until they are prepared to tender the requisite sum for this purpose. For myself at least I am prepared to say that whatever objections there are against co-education as a principle, and they are many and various, they are overcome by the spirit of the age. Whoever carefully studies public sentiment, in regard to educational matters, will be convinced that the tendency is in the direction of co-education,—even in the oldest and most conservative institutions. Moreover, it is but fair to say that where the experiment has been carefully tried, it has not only not been attended with the disasters predicted of it, but has generally worked well. Finally, the most important need of the College is for unrestricted endowment funds, the income of which may be used in the discretion of the trustees for those objects which the best interests of the College seem to require. There are countless objects, apart from the payment of salaries and the erection of buildings, indispensable to the life and progress of an institution of learning, for which, too often, there is no specific provision. These can only be secured by funds that are without restriction.

The whole number of students admitted to the College during the year is thirty-three.* They are as follows:—

---

* It may not be improper to state that for the next year a larger number of students has already been admitted than ever before entered the College at one time. The number is as follows: For the—

| | |
|---|---|
| Freshman class, | 24 |
| Senior class, | 1 |
| Engineering department, | 18 |
| Special students, | 5 |
| Divinity school, | 11 |
| Total, | 59 |

| | |
|---|---|
| Freshman Class, . . . | 18 |
| Junior Class, . . . . | 2 |
| Senior Class, . . . . | 1 |
| Engineering Department, . | 5 |
| Special Student, . . . | 1 |
| Divinity School, . . . | 6 |
| Total, . . . . | 33 |

The whole number of degrees given at the last Commencement was twenty-three, as follows:—

| | |
|---|---|
| Bachelor of Arts, . . . | 13 |
| " of Mechanic Arts, . | 1 |
| " of Divinity, . . | 5 |
| Master of Arts, . . . | 3 |
| " of Mechanic Arts, . | 1 |
| Total, . . . . | 23 |

The whole number of students in the College in all departments is one hundred. They are distributed as follows:—

| | |
|---|---|
| Undergraduates, (College) . | 77 |
| " (Div. School) | 17 |
| Graduates . . . . | 6 |
| Total, . . . . | 100 |

I submit a brief statement of the work performed in each department, made up from the reports of the individual professors. To this account is appended a table, giving the names of instructors, the subjects of instruction, the nature and amount of the work, the text-books used, the number of pupils in each class, and the number of recitation hours.

In Latin the sophomores read one book of the Satires and the Ars Poetica of Horace, Cicero's Lælius, and the Germania and Agricola of Tacitus. During the first half-year they had one exercise a week in translating English into Latin. The freshmen read one book of Livy, Cicero's Cato Major, and three books of the Odes of Horace. They had one exercise a week in Latin Composition and recited twice a week in Roman Antiquities, using Liddell's History of Rome, Rawlinson's Manual of Ancient History, and Ramsay's Manual of Roman Antiquities. They also had a course of lectures on the History of the Latin language and literature. One senior took Latin as an elective during the whole year, and received honors in Latin at his graduation. One senior, one junior, and one sophomore elected Latin during the second half-year, reading selections from Ovid. Three juniors elected Latin during the first half-year, reading one book of Cicero's Tusculans. Two freshmen did extra work in Latin the first half-year, reading the Menæchmi of Plautus.

The freshmen received instruction in Greek six times a week for the first half-year, and five times a week for the second half-year. As text-books were used Xenophon's Memorabilia and Plato's Protagoras, in the first half-year, and Homer's Odyssey in the second. One hour a week was devoted to reading at sight of the various authors used as text-books. Instruction was also given to the class, once a week, in Greek Prose Composition. As usual, no text-book was used; the exercises being made out with reference to the authors read, dictated to the class, and corrected at the board in the following recitation.

The sophomores received instruction four times a week during the first half-year. As text-book the Orations of Lysias were used and the Promotheus of Æschylus. One hour was devoted to reading at sight and one to writing Greek prose composition. During the second half-year two sophomores took the Greek option and recited three times a week. The exercises consisted in reading Œdipus Tyrannus, reading at sight different authors and Greek composition.

The work done in the Mathematical department during the past year is as follows:—

The object aimed at is to give during the first year and a half of the College course instruction in those branches which are essential to study intelligently the required physics and astronomy; and also give as much development as possible to those students who have minds constituted so as to apprehend quickly mathematical relations, and follow easily mathematical reasoning, by a careful and thorough study of the purely analytical parts of the several branches. Algebra as far as the theory of equations, solid and spherical geometry, trigonometry, both plane and spherical, and analytic geometry—as much of the last subject as can be discussed during fifteen weeks — are studied during these eighteen months. Both sections of the sophomores had analytic geometry. As Mr. Pearson, who has shown himself a very valuable instructor, both on account of his remarkable genius as a mathematical student and his enthusiasm as an ardent worker, desired to teach the section composed of students who had shown themselves most apt in mathematics, the Walker Professor took the remainder of the class, and by lectures, being careful to arrange the subjects, and only to advance as rapidly as each student thoroughly grasped the matter presented, was able to give them a fair knowledge of the elements of the subject, as applied to the straight line and the conic sections. He taught the freshmen four times a week throughout the year, one section of the sophomore class four times a week through the first half-year, the third engineers three times a week, by lectures, throughout the year, and the second engineers three times a week throughout the year. Besides, during the last half of the year about one-half of the freshman class took as an extra the theory of equations, which was treated, as extensively as the time allowed, in lectures twice a week.

In physics, the junior class, consisting of eighteen members, attended with the professor during the year about one hundred recitations and lectures; four times a week during the first half, and three times a week during two-thirds of the second half, the remaining third being devoted to astronomy. The study apparently enlisted the interest of the class, as absences for trifling reasons were infrequent. It was also shown by the large number that elected to study physics practically during the latter half of the year. In addition to this class the professor met a class in elective physics, in which the conservation of energy and first principles, by Spencer, was studied three times a week during the year. These were seniors, five taking the first and eight the second of these studies. The candidate for the Master's degree also recited three times a week during the year. Studying Maxwell's theory of heat, interspersed with laboratory work and lectures.

In the laboratory, which has largely been in the care of Mr. Hooper, the assistant professor, there has also been a very considerable amount of good work done. During the first half-year one senior and one special student read Prof. S. P. Thompson's Lessons in electricity and magnetism. In the second half-year the same students, besides reviewing the work of the first half-year, solved many problems in electricity and magnetism, studied the theory and construction of dynamo electric machines, systems of incandescent and arc lighting, the economy of conductors, galvanic batteries, multiplex telegraphy, etc. In the second half-year sixteen sophomores and three second engineers read Magnus' Mechanics, solving all the problems in the book, and considering such others as from time to time presented themselves to the instructor or to members of the class. In all, during the past year, seven seniors, five juniors, five sophomores, one third engineer, one second engineer, one special, and one private student have pursued practical work in the physical laboratory. All departments of physics have been represented in this work, but particular attention has been given to electrical measurements.

Much valuable apparatus, never before possessed by the College, has also been constructed for use in the laboratory by the students and assistant professor. Among this apparatus are the following pieces:—

1. A large tangent galvanometer for the absolute measurement of current.
2. A set of resistance coils, in German silver wire, 1000-20,000 ohms.
3. A plug switch board for electric lighting currents.
4. Apparatus of the determination of the temperature co-efficient of electrical resistance.
5. Two cells for measuring the resistance of liquids.
6. Dipping needle.
7. Joule's apparatus for reading the dipping needle.
8. Unifilar magnetometer.
9. Magnetometer for reading deflections.
10. Apparatus for determining the heating effect of the electric current.
11. Current meter.
12. 4-Cell dip battery.
13. Electric chronograph.
14. Balistic galvanometer.
15. Apparatus for measuring the co-efficient of expansion in metal rods.
16. Apparatus for measuring the co-efficient of expansion in gasses.
17. Apparatus for determining the modulus of transverse elasticity in rods.
18. Apparatus for studying torsion.
19. Apparatus for rulling scales.
20. Photometer, Ritchie's.

To have purchased this apparatus would have required many hundred dollars; and while none of it is highly finished, most of it works well. Altogether the lot is certainly worth several hundred dollars.

There is an urgent demand in this department for more and better laboratory space, and a larger equipment of apparatus. For the latter object alone several thousand dollars could be advantageously expended. It is difficult to see how these requirements can be satisfied, unless some friend of the College can be found who will do for the department of physics what Mr. Barnum has so generously and nobly done for that of natural history.

During the first half-year the juniors and second engineers had Chemistry four hours a week. During the second half-year the junior option occupied four hours a week. The electives in chemistry were taken for the first half-year by three seniors and one junior, and for the second half-year by four seniors, three juniors and five engineers.

In the department of Engineering the usual amount of work has been accomplished during the past year. The professor's duties have been somewhat increased in one direction, by the instruction given to the elective engineers in the use of tools, and relieved in another by assistance from the Walker Special Instructor. Three regular course men have elected drawing and probably others would have done so but for the cost of instruments. The desirability of a knowledge of plain drawing is generally admitted, and were the drawing instruments owned by the College, as is the apparatus in the laboratories, and lent to students for use in the drawing-room, many would undoubtedly be glad of the privilege to elect.

The several branches of study included in the department of Natural History have been pursued in the same order during the past college year as in the year preceding. The seniors, the first half-year, had four recitations in Le Conte's geology with occasional lectures. The class in elective biology, four in number, were taught six hours a week the first half-year, using as a general guide the well-known text-book of Huxley and Martin. One candidate, for the degree of A. M., pursued an advanced course in biology, requiring six hours of instruction a week. During the second half-year the juniors recited and finished Gray's lessons in botany and Nicholson's zoology, with four lessons a week. Fourteen sophomores elected in Physiology and finished Huxley and Youmans's manual, with lectures. Three seniors and one engineer were instructed six hours a week for the half-year in mineralogy. The candidate for the degree of A. M., occupied six hours a week for the half-year in biology. The Barnum Museum, when completed, will furnish additional and much needed facilities for doing work in this department. Good work-rooms for the practical study of mineralogy and biology have been fitted up in the basement of the Museum, where the student will find all the conveniencies, material and instruments required for research in those branches of natural science. The College is indebted to Dr. Alexander, of Belmont, Mass.; Mr. William York, of Nashua, N. H., and Mr. Edwin M. Lee, of Newfield, N. J., for valuable specimens of minerals, and to Mr. John W. Freese, A.M., of Cambridge, for fine zoological specimens.

In the department of Modern Languages the class beginning German consisted of twenty students, who recited six times a week for the first half-year. Fourteen students continued the study, as an elective, for the second half-year, and recited twice a week. There was also an elective class in advanced German, consisting of five students, who recited three times a week. The class in required French was composed of fifteen students, who began the subject at the mid-year, and recited daily. There was also a class of eight students, who elected for the second half-year, and recited three times a week. The professor reports great interest among his classes, and a disposition to make practical use of the knowledge acquired in the different departments of science, stimulated no doubt by the interest of the professors in those departments.

Instruction in Oratory has been given in four forms. First, by lectures to all the students. Secondly, by critical class work in synthesis and analysis. Thirdly, by class and private drills in the technique of voice, gesture and articulation. Fourthly, by the public presentations of readings and recitations, after thorough preparation. All students are required to attend the lectures, and to take notes, upon which they are to pass examination. In this way, by a course of lectures and examinations, the subject of gesture was considered and practical application of the principles made to discourse. Close work in analysis and synthesis was confined to Shakespeare. The seniors and juniors took the play of Henry V. The sophomores and freshmen, the play of Julius Cæsar. The professor says that he has never taught classes more interested and enthusiastic.

The following is the course pursued. No student is urged or required to present an exercise. The advantages of so doing are stated, and the matter left to the student. He loses neither cast nor credit by keeping off the platform. No student is allowed to present an exercise in public, who has not thoroughly analyzed it, and prepared its synthesis for presentation. He must attend two private rehearsals before the professor. He cannot appear a second time until every other student, who may wish to speak, has done so. The results of this practice show clearly its entire adaptability to the situation. More than half the freshmen and nearly two-thirds of the sophomores, with all the seniors and juniors, took part in the public exercises. The seniors who elected Oratory were sixteen in number, the juniors were seven. The theological students were met twice each week during the professor's attendance at the College.

The second session of the summer school connected with this department, was a gratifying success. The number in attendance was double that of last year. Nearly fifty students represented seventeen states of the union; California and Georgia each sending two.

In the department of Rhetoric, Logic, and English Literature, work for the last college year is embraced in the following schedule:—

During the first five weeks the seniors read Jevons's elementary treatise on deduction; during the second half-year they read Mill's inductive logic. The juniors, during the second half-year, read Parts I–III of Dr. Porter's treatise on intellectual philosophy. Four seniors in the first half-year and one in the second elected mataphysics, reading chiefly selections from Hamilton, Mill and Spencer. The sophomores, during the first half-year, read Prof. A. S. Hill's rhetoric, the work being extended by a variety of exercises. Themes were required of seniors, juniors, and sophomores chiefly during the half-year in which the respective classes were engaged in required work, and to a considerable extent in connection with elective studies. Analysis of speeches elected, by nine juniors, for the first-half year was made to illustrate to some extent the course of American political history, from the adoption of the Constitution to 1830 Six seniors, during the first half-year, read extensive selections from English authors, from 1780 to 1830, combining various critical exercises with the reading. The same number in the second half-year pursued studies in criticism, reading Lessing's Laocoon and selections from Kames's Elements, analyzing a large number of essays in literary criticism, and preparing similar essays for presentation in the class-room. Under the junior option with continued Chemistry, ten members of the class and five members of other classes read selections from five representative authors, from Chaucer to Milton, combining an outline of the development of the literature of that period. Authors read in addition to those already named were Spenser, Bacon and Shakespeare.

The condition of the Library remains unchanged. It is as well handled and cared for by the very efficient librarian, Miss Mellen, as is possible under the circumstances in which it is placed. The number of bound volumes is nineteen thousand seven hundred and eighty-nine. The number of accessions during the year is one hundred and sixty-seven, sixty-nine by donation and fifty-five by purchase.

The President of the College gave instruction to the seniors during the first half-year, four hours a week in ethics, and during the second half-year, in political economy four hours a week. Seven seniors took the electives in law three hours a week throughout the year, pursuing the subject of ancient law during the first half-year and international law during the second half-year.

The College is indebted to the following gentlemen for valuable courses of lectures given before the divinity school: Edwin C. Bolles, D. D.; A.

A. Miner, D. D.; Richard Eddy, D. D., and the Rev. H. W. Rugg.

The attention of the trustees is called to the report of the Dean of the Divinity School, which is submitted herewith.

E. H. CAPEN.

*Tufts College, Sept. 18, 1884.*

### PRESCRIBED STUDIES (SENIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| President Capen. | Pol. Economy.<br>Ethics. | Fawcett's, with Lectures.<br>Calderwood's. |
| Prof. Marshall. | Geology. | Le Conte's, with Lectures. |
| Prof. Shipman. | Logic.<br>Rhetoric. | Jevons's; J. S. Mill's.<br>Six Themes. |
| Prof. Bray. | App. Mechanics.<br>Civil Engineering.<br>Roads & Railroads.<br>Drawing & Field Work. | Rankine's; Weisbach's; Wood's.<br>Mahan's; Shreve's Bridges and Roofs.<br>Gillespie's and Henck's. |

## PRESCRIBED STUDIES (JUNIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Prof. Marshall. | Botany.<br>Zoology. | Gray's Lessons and Manual, with Lectures.<br>Nicholson's. |
| Prof. B. G. Brown. | Calculus. | Byerly's Integral Calculus. (Eng.) |
| Prof. Shipman. | Psychology.<br>Rhetoric.<br>Eng. Lit. | Porter's Intellectual Science.<br>Six Themes.<br>British Authors (1580–1660) (*optional with Chemistry*). (13 for ½ year.) |
| Prof. Dolbear. | Physics.<br>Astronomy. | Olmsted's College Philosophy.<br>Newcomb and Holden's. |
| Prof. Fay. | German. | Macmillan's Fasnacht's Progressive German Course, Part II.; Spielhagen, Hans und Grete. |
| Prof. Michael. | Chemistry. | Inorganic Chemistry, Lectures.<br>Organic Chemistry, Lectures (*optional with Eng. Lit.*). (5 for ½ year. |

## PRESCRIBED STUDIES (SOPHOMORE YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Prof. Marshall. | Physiology. | Huxley and Youmans's, with Lectures (*optional with Greek*). (14 for ½ year.) |
| Prof. Schneider. | Greek. | Æschylus, Prometheus; Lysias, Orations; Reading at sight; Greek Composition.<br>Sophocles, Œdipus Tyrannus; Reading at sight; Greek Composition (*optional with Physiology*). (2 for ½ year.) |
| Prof. Dearborn. | Latin. | Horace, Satires, Ars Poetica; Cicero, Lælius; Tacitus, German. and Agric.<br>Translation of English into Latin. |
| Prof. B. G. Brown. | Mathematics. | Briggs's Analytic Geometry, with Lectures. (one section.) |
| Prof. Shipman. | Rhetoric. | A. S. Hill's; Six Themes. |
| Prof. M. T. Brown. | Oratory. | Lectures; Declamations. |
| Prof. Fay. | French. | Macmillan's Fasnacht's Progressive French Course, Parts I. and II.; Knapp's Readings, 160 pp. (including 40 pp. of Drama). |
| Prof. Bray. | Engineering. | Drafting and Field Work. |
| Prof. Hooper. | Mechanics. | Magnus's. |
| Mr. Pearson. | Mathematics. | Bowser's Analytic Geometry. (one section.)<br>Church's Descriptive Geometry; Goodeve's Steam Engine. (Eng.) |

## PRESCRIBED STUDIES (FRESHMAN YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Prof. Schneider. | Greek. | Xenophon, Memorabilia; Plato, Protagoras.<br>Homer, Odyssey, Books XIII.–XV.; Reading at sight; Greek Composition. |
| Prof. Dearborn. | Latin. | Livy, Book XXI.; Cicero, Cato Major; Horace, Odes, Books I.–III.<br>Harkness's Latin Composition, Part III.; Extempore exercises.<br>Roman History, Liddell, Rawlinson's Manual.<br>Roman Antiquities, Ramsay.<br>Lectures on the History of the Latin Language and Literature. |
| Pro. B. G. Brown. | Mathematics. | Wentworth's Algebra; Wentworth's Solid and Spherical Geometry; Wentworth's Trigonometry. |
| Prof. M. T. Brown. | Oratory. | Declamations; Lectures. |
| Prof. Fay. | French. | Lacombe's Petite Histoire du Peuple Français, concluded; Macmillan's Fasnacht's Progressive French Course, Part III.; Dramatists of the Classic Period; Modern Novelists. (Phil.) |
| Prof. Bray. | Engineering. | Surveying, Murray's.<br>Drafting and Field Work. |
| Mr. Pearson. | Engineering. | Descriptive Geometry, Church. (Eng.) |

## ELECTIVE STUDIES.

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* |
|---|---|---|---|
| Pres. Capen. | Law. | Maine's Ancient Law.<br>Wolsey's International Law. | 7 for year. |
| Prof. Marshall. | Biology. | Huxley and Martin's. | 4 for ½ year. |
| | Mineralogy. | Dana's; Platner's Blow-pipe Analysis, Laboratory Work. | 4 for ½ year. |
| Prof. Dearborn. | Latin. | Cicero, Tusculans, Books II. & III.; Plautus, Aulularia; Selections from Juvenal; Selections from Pliny's Letters. | 1 for year. |
| | | Cicero, Tusculans, Book I. | 3 for ½ year. |
| | | Selections from Ovid. | 3 for ½ year. |
| Prof. Shipman. | Rhetoric. | American Oratory. | 9 for ½ year. |
| | Eng. Lit. | British Authors (1780–1830). | 6 for ½ year. |
| | | Criticism. | 6 for ½ year. |
| | Metaphysics. | | 5 for ½ year. |
| Prof. Dolbear. | Physics. | Conservation of Energy. | 5 for ½ year. |
| | | First Principles. | 8 for ½ year. |
| Prof. M. T. Brown. | Oratory. | Special Drill in Reading and Declamation. | 23 for ½ year. |
| Prof. Fay. | French. | Dramatists of the Classic Period; Modern Novelists; Macmillan's Fasnacht's Progressive French Course, Part III. | 8 for ½ year. |
| | German. | Goethe, Hermann und Dorothea; Schiller, Maria Stuart. | 14 for ½ year. |
| | | Minna von Barnhelm; Egmont; Wahrheit und Dichtung, (100 pp.). | 5 for ½ year. |

## ELECTIVE STUDIES (CONTINUED).

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *No. of Students.* |
|---|---|---|---|
| Prof. Michael. | Chemistry. | Organic Chemistry,<br>Inorganic Chemistry,<br>Quantitative Analysis,<br>Qualitative Analysis, } Laboratory Work. | 4 for 1st ½ year.<br>12 for 2d ½ year. |
| Prof. Bray. | Engineering. | Orthographic Projection.<br>Mechanical Drawing.<br>Architectural Drawing. | 3 for ½ year. |
| Prof. Hooper. | Physics. | Thompson's Electricity. | 2 for year. |
| | | Laboratory Work. | 7 for year.<br>12 for ½ year. |

NOTE.—Phil. denotes Philosophical students; Eng. Engineers. For hours per week and number of students in prescribed course see catalogue and the President's report of the respective departments.

# THE DIVINITY SCHOOL.

*To the President:*

In accordance with the requirements of the institution I respectfully submit the following report of the condition and work of the Divinity School for the year ending, June 18, 1884.

At the beginning of the year the whole number of students in the school was eighteen; viz: in the senior class, four; in the junior class, three; of the second yearsmen, seven; and of the first yearsmen, four. After a few weeks one student who had entered the class of the second yearsmen withdrew from the department, under the advice of the Faculty, to enter the College of Letters for a full course of study, but with the purpose of ultimately returning and completing his theological studies. One member of the junior class, who had for some time subjected himself to a degree of distrust in the minds of his teachers and associates, was finally dismissed under circumstances which left no room to doubt that he was unworthy longer to remain in the school and unfit to be a candidate for the Christian ministry.

At the close of the College year four young men having completed their course of studies in the school, and passed the required examination were duly graduated. Of these four, three I am pleased to say, were the sons of clergymen, and college graduates, while the fourth had enjoyed exceptional advantages for academic education, and distinguished himself in his studies here. They had all received and accepted invitations to settle over parishes previous to their graduation, and the same would probably have been the case had the number of the class been two or three times as large as it was. The demand for young men from the school is generally much beyond our means of supply.

The work of the school was carried on essentially in the usual way and with the usual success. Although the health of Professor

Tousey, made it imperative in the opinion of his physicians that he should spend the winter and spring in a milder climate, he still performed by means of extra work from the opening of the College year till the holiday recess a large part of the instruction in the various branches of his department for the whole year; and Professor Harmon, who assumed his place in the school immediately after the holidays took up whatever remained unfinished in Mr. Tousey's work and completed it. He also took a part of the studies which had heretofore fallen to me, and so filled the gaps occasioned by our infirmities. Meanwhile the instruction in the rooms of Professors Leonard and Knight went on without interruption or change. For a detailed account of the work of the school in the various departments, I beg to refer you to the tabulated statement accompanying this report.

After the existence and operation of this department of the College for fifteen years, I trust it may not be deemed improper, if we stop a moment to throw a glance backward and note what during this brief period in the early history of the school it has accomplished. It was opened as you will remember with the beginning of the College year, September 1869. It began modestly with two teachers and three students. Its first class, after a two years course of study was graduated in 1871. The curriculum was soon after extended to three years for College graduates and four years for all others. Of its students, the great majority of whom have taken the full course and regularly graduated, there are now in the ministry between sixty and seventy. Many of these as would naturally be expected have found settlements in New England, while others may be found in the Middle States and the far West. Several of them are now occupying not simply very respectable but highly important positions. Three of them, graduates of both the College and the Divinity School fill chairs of Professors in the institution in which they received their theological education. One is settled in Philadelphia, two in New York City and a fourth in Hartford, the capital of Connecticut. One fills the pulpit of St. Paul's in Chicago, and another that of Akron, Ohio, the seat of Buchtel College. One is engaged in the important field of Cincinnati, another the more distant region of Menasha, Wisconsin, and a third that of Lincoln, the capital of Nebraska. Nearer home our students fill the Universalist pulpits of Bangor, Dexter, Skowhegan, and Lewiston, Me., and those of Springfield, Gloucester, Fitchburg, Spencer, Newtonville, and several other parishes in our own State. But what is more important and gratifying than any mere place can be is the fact that generally they are acquitting themselves with credit as Christian ministers and doing good work in building church edifices, organizing churches and Sunday schools, paying church debts, and whatever seems most necessary for denominational prosperity and the well being of parishes.

I can not close this report without calling your earnest attention to the existing needs of this department. While I rejoice in every improvement, in every step of progress our young college is annually making, and while I have to thank you and the Board of Trustees for the support and encouragement you have constantly given this school, I can not withhold an expression of regret that the church has proved so indifferent to its interests and its work. Important as the College is to the church, it does not lie so near to its life as this school. Within little more than a single decade it has given it more than sixty young clergymen whose ministry has been marked and beneficent. Yet we still need a suitable building for the accommodation of the school, a proper library for its work, and funds for its support. Aside from the provision made by Mr. Packard for the support of one Professor, it has no endowment and the only gift or bequest for its benefit that has during all these years fallen to its lot is that of $500 by a lately deceased friend in humble circumstances in Boston. The school thus far, has under many disadvantages done good work, but with proper means it is capable of doing much better in the years to come. Its longer continuance in its present condition can not be honorable to the church in whose interests it is enlisted and for whose welfare it lives. The church is able to make it what it should be, and the blessing it confers upon it will be returned four fold into its own bosom.

Respectfully submitted,

THOMAS J. SAWYER,

*Dean of the Faculty.*

*Tufts College, Sept. 18, 1884.*

## FIRST YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Archæology.<br>Old Testament. | Jahn's, complete.<br>Keil's Introduction, complete. | 2 for year.<br>2 for year. |
| Prof. Tousey. | Logic. | Bain's. | 6 for ⅜ year. |
| Prof. Knight. | Rhetoric. | A. S. Hill's; Spencer's Philosophy of Style; Analysis of Selections; Eight Themes. | 3 for ½ year.<br>4 for ½ year. |
| | Greek. | Cary's Introduction to New Testament Greek; Four Chapters of St. John's Gospel. | 3 for ½ year.<br>2 for ½ year. |
| | Old Test. History. | Lectures on the Origin of the Religious Opinions of the Hebrews. | 5 for month. |
| | New Test. History. | MacLear's; Gardiner's English Harmony; Lectures and Notes. | 4 for ½ year. |

## SECOND YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Hermeneutics. | Lectures on the General Principles. | 1 for ½ year. |
| Prof. Leonard. | Homiletics. | History of Preaching; Conception and Structure of the Sermon; Homiletical Analysis of portions of the Gospels. | 3 for year. |
| Prof. Tousey. | Psychology.<br>Logic. | Porter's Mental Science; Hamilton's Metaphysics.<br>Bain's Inductive Logic. | 2 for ⅜ year.<br>6 for $\frac{7}{39}$ year. |
| Prof. Harmon. | Psychology. | Porter's Mental Science. | 3 for ½ year. |
| Prof. Knight. | Church History. | Hase's, to the Peace of Westphalia; Hagenbach's History of Doctrines, to the Reformation; Lectures. | 2 for ½ year.<br>4 for ½ year. |
| | Greek. | Chapters V and VI of John's Gospel. | 1 for ½ year. |

## THIRD YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Theology. | Lectures on Anthropology. | 2 for ½ year. |
| | Old Testament. | Lectures on the Character and Contents of the Revelation Contained in the Old Testament. | 2 for ½ year. |
| Prof. Leonard. | Homiletics. | Study of Sermons of Eminent Preachers; Homiletical Analysis of portions of the Acts and of the Epistles; Composition and Delivery of Sermons. | 3 for year. |
| | Christian Evidences. | Row's Christian Evidences in view of Modern Thought; Lectures; Studies in Rawlinson, Dr. Young and Prof. Rogers. | 3 for year. |
| Prof. Tousey. | Ethics. | Calderwood's Moral Philosophy; Bascom's Ethics; Themes. | 5 for ⅜ year. |
| Prof. Harmon. | Exegesis. | Studies in the Gospel of Matthew. | 3 for ½ year. |
| Prof. Knight. | Church History. | Hase's Mediæval and Modern; Lectures on the History, Statistics and Doctrines of the Sects now Existing. | 2 for ½ year.<br>3 for ½ year. |

## FOURTH YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Theology. | Doctrines of the Christian Religion. | 2 for ½ year. |
| Prof. Leonard. | Homiletics. | Written Analysis of Printed Sermons; Lectures on Sermon-Style and Preaching; Composition and Delivery of Sermons. | 3 for ½ year. |
|  | Church Polity. | Polity of the New Testament; Polity of Special Churches; Polity of Universalist Church. | 3 for ½ year. |
|  | Pastoral Theology. | Studies in Hoppin and Vinet; Notes on the basis of Van Oosterzee; Lectures. | 3 for ½ year. |
|  | Comp. Theology. | Lectures on the Non-Christian Systems, comparing and contrasting them with Christianity. | 3 for ½ year. |
| Prof. Tousey. | Natural Theology. | Paley's; Flint's Theism; Butler's Analogy; Lectures and Readings. | 5 for ⅜ year. |
| Prof. Harmon. | Exegesis. | Studies in the Theology of the New Testament. | 3 for ½ year. |

## LECTURES, ADDRESSED TO THE WHOLE SCHOOL.

| *Lecturer.* | *Subject, Etc.* |
|---|---|
| Dr. Bolles. | Four Lectures on the Need and Value of Science to the Minister. |
| Dr. Eddy. | Six Lectures on The Beginning and Progress of the Universalist Church. |
| Rev. H. W. Rugg. | Four Lectures on the Work of the Preacher. |

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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

1884-85.

THE LIBRARY OF THE
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BOSTON:
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1885.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen :*

The President of the College has the honor to submit the following report for the academic year 1884-85; namely, from September 18, 1884, to September 17, 1885.

The Corporation has lost two members by death during the year,—

Charles H. Rogers and
Norman C. Munson.

Mr. Rogers was a member of the board of trustees as originally constituted, and took a deep interest in the founding of the College. He gave timely aid in a season of financial embarrassment, and his advice was of great value to the authorities in raising funds to increase the endowment. Mr. Munson also manifested his interest in the College by generous gifts, and had his financial prosperity continued, he would have been doubtless one of its prominent benefactors.

JOHN B. WINSLOW

has been elected to fill one of the vacancies. The other vacancy has not been filled.

The Faculty has remained unchanged.

The whole number of students admitted to the College is sixty-one. They are distributed as follows: —

| | |
|---|---|
| Freshmen, . . | 24 |
| Juniors, . . | 1 |
| Seniors, . . | 1 |
| First Engineers, . | 17 |
| Third Engineers, . | 1 |
| Special Students, . | 6 |
| Divinity School, . . | 11 |
| Total, . . . | 61 |

The whole number of degrees given in course at the last commencement was twenty-four, as follows: —

| | |
|---|---|
| Bachelor of Arts, . . . | 17 |
| " " Mechanic Arts, . | 2 |
| " " Divinity, . . | 2 |
| Master of Arts, . . . | 3 |
| Total, . . . | 24 |

The whole number of students in the College, in all departments, is one hundred and thirty-five. They are distributed as follows:—

| | |
|---|---|
| College of Letters, undergraduates, | 104 |
| Divinity School, . . . . | 23 |
| College of Letters, graduates, . . | 6 |
| Divinity School, graduates, . . | 2 |
| Total, . . . . | 135 |

This is the largest number of students that has ever been enrolled in the membership of the College, and the enrollment for the coming year promises to be still larger. The sure and steady growth of the College in the confidence of that portion of the public to which it must appeal for patronage is very gratifying. There is abundant evidence that the patient, thorough and faithful work of its instructors, together with the many facilities which the self-sacrificing friends of the institution have so generously provided, are not to be unappreciated in the end nor without their appropriate reward. But the fact which gives occasion for genuine satisfaction presents also some serious problems for those who are charged with the administration of the trust.

In the first place the number of men now in the College fills our dormitories to overflowing and points distinctly to the need of further accomodations.

Secondly, classes in some departments have grown to such a size that they have become unwieldy. The multiplication of classes also has taxed the time of professors to the utmost. If the increase continues, as it bids fair to, the time is not far distant when the need of additional teachers will be imperative.

Thirdly, recitation rooms which were ample in size for a small number of students are found inadequate for some of the classes which now fill the benches and crowd to the black-boards. The working laboratories also will soon need enlargement and the apparatus must be correspondingly increased.

The first of these needs could be met by providing a separate building for the Divinity School and devoting the whole of West Hall to the use of students in the College of Letters. The gift of money for the erection of such a building and for the separate endowment of the school would be more heartily welcomed than any other specific benefaction. The need of such a gift is the most serious and pressing of any which now confronts us.

The second need will be met in some measure by the removal of the Library from its present quarters to a new building which has been privately assured to the President at an early day. But the needs expressed under both the second and third heads could be most effectually secured in a building devoted exclusively to scientific teaching and investigation. Here we have the best opportunity that has yet been presented to us for enlargement and growth. It will be seen on inspection that a large percentage of our increase is in the department of engineering. The high grade of instruction given and the facilities offered in the different branches of theoretical and applied science has attracted a number of young men who desire superior advantages in these branches. If now we had the means to enlarge our facilities and add somewhat to our teaching force, there would be no difficulty in building up a strong and flourishing scientific school.

The Barnum Museum of Natural History, which was nearly completed at the time of the presentation of my last report, has been fitted and furnished with cases. The specimens purchased by Mr. Barnum of Professor Ward have been mounted and set up. Mr. Barnum has also furnished many specimens from his own private stock. The whole contribution makes not only a very choice and interesting collection, but one of great value for teaching purpose. It should also be said that the donor of the building has made a beginning in his promised maintenance fund by paying twenty thousand dollars into the treasury.

The authorities of the College make grateful acknowledgment of an important bequest from Miss Harriet H. Fay. This lady had long taken a deep interest in the welfare and progress of the College. She made testamentary provision after certain specific legacies should be paid, many of which were for charitable and religious purposes, that the remainder of her property should be given to Tufts College to constitute a fund, the income of which should be applied to the support of the professorship of English literature.

Mr. Giddings H. Ballou, the only surviving son of Hosea Ballou, 2nd, the first President of the College, has given to the library the manuscript sermons and lectures, note-books, historical maps and charts, that formerly belonged to his father, together with the desk at which all the literary work of the latter was done. The gift is a valuable one, especially as exhibiting the methods of study of a remarkable scholar. The lectures upon historical subjects which Dr. Ballou gave to his classes are of permanent value and undoubtedly would merit publication.

I call attention to the detailed statement of the internal affairs of the College by departments.

In the department of Latin the sophomores read one book of the Satires and the Ars Poetica of Horace, Cicero's Laelius, the Germania and Agricola of Tacitus and a few Satires of Juvenal. They also had an exercise in Latin composition once a week for the first half-year. The freshmen read one book of Livy, Cicero's Cato Major and three books of the Odes of Horace, recited in Roman history and antiquities twice a week, using Liddell's History of Rome, Rawlinson's Manual and Ramsay's Elementary Manual of Roman Antiquities. They also recited in Latin composition once a week during the year. Two seniors elected Latin for the year, reading Cicero's Tusculans, Juvenal and one play of Terence. Two juniors and one special student elected Latin for the second half-year, reading the Georgics of Virgil.

In the department of Greek the freshmen received instruction in Greek six times a week for the first half-year and five times a week for the second half-year. Textbooks, Plato's Protagoras, Homer's Odyssey, books I—IV; Whitons, Select Orations of Lysias. One hour a week was devoted to reading at sight in the various authors used as textbooks. In connection with Lysias attention was also paid to Greek antiquities as the several orations gave an opportunity. Instruction was also given to the class, once a week, in Greek prose composition. As usual, no textbook was used, the exercises being made out with reference to the prose authors read in the class-room, dictated to the class and corrected at the board. The sophomores received instruction four times a week during the first half-year. Textbooks, Demosthenes' Phillippics and Sophocles' Antigone. A good deal of time was spent in analyzing the lyrical parts of the Antigone with reference to the new method as laid down in Schmidt's Introduction to the Rhythmic and Metric of the Classical languages. One hour a week was devoted to reading at sight and to writing Greek prose composition; for the latter occasionally oral tranlations from English into Greek were substituted. During the second half-year nine sophomores who took the Greek option received instruction three times a week; one was devoted to reading the last half of Sophocles' Antigone, one to reading at sight of Lucian's Dialogues and one to Greek prose composition. Two juniors elected Greek for the first half-year; three for the second half-year. Textbooks, Euripides' Medea, Odes of Pindar and the Pastoral Poems of

Theocritus. The time occupied was two hours a week. One hour was devoted to the reading of the authors; the other to the writing of advanced Greek prose. The lyrical parts were read with especial reference to metrical analysis and Pindar and Theocritus with reference to their peculiar dialects. Part of the time was also spent in reading at sight passages of the above authors.

The work done in the department of Mathematics under the Walker professor does not differ materially from that of the previous year. Though individual members may have been able to do more work than was accomplished by the entire classes, on account of exceptional ability for mathematical study, still, as the work has to be done in classes scarcely a greater amount could have been done by the average college student in the time devoted to college work during the year. The freshman class was much larger than any previous class in that subject, numbering about forty. This number so fills the class-room that work on the blackboard except by the instructor has to be almost entirely omitted and in its place work on paper by all the class at once has to be substituted. In this way all of the class are busy during the whole hour just as at a written examination. The chief objection to this method of conducting a recitation is, that in the crowded condition of the room, it is quite impossible to do away with the likelihood that an unfaithful and unscrupulous student will get material assistance from the written work of his neighbor, which is necessarily within his view. To obviate this fault a larger room for work of large classes should be available.

The freshmen did about the same amount in algebra, in solid and spherical geometry, and in plane and spherical trigonometry as the previous class. The sophomores were divided into two sections, one of thirteen men the other of eight. The larger section, containing those whose proficiency during freshman year had been greatest, was assigned to Mr. Pearson, to carry out, as nearly as the course of mathematical study will now allow, the requirements of the Walker special instructorship. The other section was taught by the professor. Both sections studied analytical geometry. The second class of engineers and three members of the regular college classes studied the differential and integral calculus. Mr. Pearson asked to be allowed to teach the third engineers in calculus and consent was given, they taking work mainly in the integral calculus. Each of these classes met their teachers three times a week throughout the year. The professor also during the second half-year had an elective class of freshmen, which all of the first class of engineers were required to join, in advanced algebra three times a week.

The work of the Walker special instructor for the first half-year consisted of sixteen hours a week distributed as follows: analytic geometry five hours, calculus three hours, surveying three hours, field work five hours. The sophomores recited in analytics using Smith's Conic Sections as a textbook. In the calculus the third engineers used as a textbook Todhunter's Integral Calculus. The class consisted of two members who were both good scholars and a large amount of thorough work was done. The first engineers recited in surveying using Maury's Surveying and Haupt's Topographical Engineering as textbooks. The work at first was not satisfactory but there was improvement during the term and the final examinations showed fairly good work. The instructor had charge of all the engineers in field work, and, thinking it better to have some definite piece of work under consideration, a railroad was projected from the hill to a point in the fells about two miles distant and the whole work of a preliminary survey was carried out. The road was located and the line and levels run during the term by the students. After the snow came the time was devoted to making a plan of the road from the notes taken in the field, each student being required to hand in a plan at the end of the term. The results of this work were very satisfactory, the students obtaining a good idea of the work required of an engineer in practice.

In the second half-year the instructor had ten hours a week as follows, calculus three hours, steam engine four hours, elective mathematics three hours. Calculus was continued with the third engineers. In order to give the class an historical knowledge of the subject as well as to show them the various ingenious methods of solving difficult problems a course of lectures was given in which some of the noted problems of Bernoulli, Lagrange and other great mathematicians were considered and solved in the class-room. The work was completed by a few weeks drill in the calculus of variation.

The second engineers had steam engine. As there is no provision in the engineering course for thermodynamics and mechanical engineering, except in this course in the steam engine, an effort was made to cover all the ground possible in the time allowed. The textbook was supplemented with numerous lectures on thermodynamics and practical steam engineering such as the designing and construction of boilers, chimneys and engines and the relative value of fuels, etc. At the end of the half-year each student was required to hand in the complete calculations for a large engine. Each man had a certain engine given him to design and he was required to calculate everything about it even to the size of rivets used in the boiler. The work in this department was very gratifying. The theses showed that the students had done a great deal of work and had gained a good knowledge of steam engineering. During the last half-year a course of lectures was given on the theory of determinants and quarternions which was attended by five students who took this work as an extra elective.

Under the professor of Civil Engineering the usual amount of textbook work has been accomplished and in addition the first class took up carpentry as an extra elective. The carpenter's shop not being ready at the beginning of the year the work accomplished was not such as may be expected hereafter.

In metal work such instruction was given in filing, turning, drilling and screw-cutting as was possible during the intervals of absence from the drafting exercise going on in another room. In the study of railroad engineering the course has been somewhat extended to include more of the principles of economic location. The experiment has been tried also of assigning for study special engineering projects and requiring reports thereon to be made from time to time. The College is under obligations to Messrs. Burditt and Williams and Messrs. Page and Curtin for several complete sets of carpenter's tools. It is hoped before another year that the department will have been supplied with a testing-machine of which it is in great need.

In the department of Physics the class composed of juniors and engineers numbering twenty-four pursued with the professor the study of physics seven and a half months, and astronomy the remainder of the college year; four times a week the first half year and three times a week the latter half. In addition to this a course of twenty lectures to five electrical engineers was given together with the supervision of the laboratory where a larger amount of work was done than in any previous year by students. It is a matter of satisfaction that so much more may be done in the physical laboratory than is done in most of the colleges. The great need is for room. It is impossible to accommodate all those who wish to avail themselves of the opportunities offered here, though the rooms are open all day.

The department has also added somewhat to knowledge by investigation and original work. The following may be mentioned:—

1. Researches on vortex rings.
2. Observations on atmospheric electricity.
3. A new galvanic cell of superior qualities.
4. On the contact theory of electricity.
5. On artificial magnets by electro deposition.
6. On an incandescent electric lamp for projection. Also some important work which is not yet completed.

Under the assistant professor of Physics the required work in mechanics was accomplished by a class of fifteen sophomores, four second and two first engineers who read about two hundred pages in Daniell's Physics, reciting four times a week for the second half-year. Numerous practical problems were also presented to the class for solution. The advanced class in electrical engineering, consisting of five members, read during the year Gray's Absolute Measurements in Electricity and Magnetism, Kempe's Electrical Testing, Gordon's Electric Lighting and Thompson's Dynamo Electric Machinery. In addition to this large amount of textbook work much experimental work in the laboratory and with the dynamo was accomplished. A set of electrical resistances from .1 ohm to 50 ohms for strong currents was made. An inductor for measuring strong magnetic fields and a dynamo capable of lighting low potential incandescent lamps were constructed. An original investigation under the direction of the assistant professor resulted in a paper published this summer and copied by foreign electrical periodicals.

Three seniors in the first half-year and one in the second half-year undertook general work in the laboratory. The second class in electrical engineering devoted themselves for the year to general physical work and simple electrical measurements. General work in the laboratory was also undertaken by one special student for the year and three engineers for the second half-year. One freshman worked occasionally at the lathe. In the spring a class of thirteen listened to a course of lectures on dry plate photography, and most of the class did more or less practical work. Besides those already mentioned many useful articles have been constructed in the shop; chief among them being two bichromate dip batteries, each of six five gallon jars, arranged in a case on castors, with windlass for raising the zincs. Although weighing nearly a quarter of a ton each, these batteries are handled and moved with the greatest ease. They yield powerful currents. The need of greater facilities in this department cannot be too strongly emphasized. The accommodations are inadequate and the instrumental appliances for higher physical work are not all that could be desired.

The regular work in the department of Chemistry consisted of a course of lectures and recitations on inorganic chemistry for the first half-year, and a similar course on organic chemistry for the second half-year. The course on inorganic chemistry was attended by thirty-three students, while two students elected the course on organic chemistry. In the chemical laboratory eight students worked throughout the college-year, and twelve took a half-year's course of work. This work embraced inorganic laboratory practice, qualitative and quantitative analysis. The teacher in charge of the department is of the opinion that a thoroughly successful course in chemistry must necessarily include a certain amount of laboratory work. The organic research laboratory has been very carefully equipped for that line of work, and offers facilities for original investigation which will compare favorably with those of any similar laboratory in the country.

During the past year the following original investigations were made: Synthetical researches in the glucoside group, and on the decomposition of Cinchonine by alcholic potash, by Arthur Michael. Laboratory Notes, by the same. On simultaneous oxidation and reduction by means of hydrocyanic acid; on the constitution of resoacetosphenone; on the conversion of potassium cyanate into thiocyanate, by A. Michael and G. M. Palmer. The constitution of the addition product of chlorhydric acid and ethel cyanide; on the action of methyl iodide on asparagine; on inactive aspartic acid; on the action of alkyl iodides on amido acids, by A. Michael and J. F. Wing. On the action of aldeydes on phenols; on the action of pycryl chloride on sodium acetacetate, by A. Michael and J. P. Ryder. On some properties of phenylsulphoneacetic ether, by A. Michael and F. H. Kendall. These researches have either been published, or are ready for publication.

In the department of Natural History, the seniors received instruction four hours a week in geology the first half-year, the juniors four hours a week in botany and zoology, the latter study not being finished but continued into senior year. The sophomores pursued the study of physiology through the second half-year with three recitations a week. Four seniors elected biology receiving instruction six hours a week the first half-year. Three continued it as an extra elective, four hours a week the second half-year. Three seniors and one engineer devoted six hours a week to qualitative and quantitative blowpipe analysis of minerals and the reduction of ores. Two students took a post-graduate course in petrology.

There has been no lack of interest on the part of the students in the studies of the department.

The Barnum Museum having been made ready, about Christmas, for occupancy, the natural history collections belonging to the College were safely transferred from College Hall, to the new building and arranged as well as time and circumstances would allow. During the past summer the fossils in the wall cases in the biological laboratory have been rearranged and labelled, but the minerals in the mineralogical laboratory are still crowded for want of room and the conchological specimens are shut up in cabinet drawers where they cannot be seen by visitors. The large Alexander Herbarium has been carefully rearranged, the plants transferred to fresh papers and placed in a suitable cabinet.

By the continued liberality of Mr. Barnum, an excellent collection of stuffed animals, together with crustacea, radiata and shells has become the property of the college. It numbers three hundred and sixty five mammals, birds, reptiles and fishes and one hundred and thirty five crustacea, radiata and shells. It was selected mainly to illustrate the study of zoology as pursued in the regular college course. The specimens are arranged in suitable cases, the sides and tops of which are mainly composed of glass, so that there is abundance of light to enable the student to study the external form of the different specimens without the trouble of removing them from the shelves. In addition to the above there have been received from Mr. Barnum a large giraffe, a hartebeest, an ovis nargali, a peccary, an antelope, a deer, three specimens of the monkey tribe—one a fine albino—a cassowary and a large crane. From Samuel Tufts of Somerville have been received a wild goose and a guinea hen. Clarence V. N. Smith presented to the museum the skins of eight rare birds, obtained by him in Florida. These have been mounted and placed on exhibition. A valuable collection of different kinds of crocidolite from South Africa has been secured to the College, through the kindness of Thomas G. Frothingham. Some excellent specimens of sponges, sea fans, echinoids and hydrozoa in alcohol, from Dr. Van Vleck, are a welcome addition to our marine forms.

The class in biology being larger this year than usual an additional microscope has been procured.

Books have been given to the library of the museum by Dr. John Alexander, Rev. A. B. Hervey, Dr. J. S. Kingsley and Prof. Geo. H. Harmon.

In the department of Modern Languages during the first half–year, besides the regular class (a) of juniors beginning German, and the freshmen (philosophical) class (b) in French, which also receives students electing that study, two elective classes in German (c and d) were formed, each reciting three hours a week, and making a total of fifteen hours weekly for the instructor. The elementary class in German (a), after the customary introductory lectures on the structure of the language, used Eysenbach's and Brandt's grammars—the former for practical drill, the latter for a closer study of special topics. In connection with this work they translated a novelette of fifty-six pages. The usual amount of work was accomplished, and in general creditably. Nearly the whole class elected the study for the second half-year.

The class in advanced French for this half-year, that marked (b) above, was unusually large and contained representatives of about every class in College, some of the best members of the senior class, who had never elected French, being classed with freshmen of the philosophical course. The class read in the half-year two plays of Racine, Athalie and Iphigenie en Aulide, one of Corneille, Cinna, and one of Moliere, L'Avare.

Classes (c) and (d,) German electives, were formed of men who for the most part had begun German at the same time, some of whom had made greater progress than others, perhaps had elected more. The more advanced read Schiller's Wallenstein to the fourth act of the Tod; the other class read the last four acts of Schiller's Maria Stuart, begun the previous term, and Goethe's Egmont. On reaching mid-year a serious difficulty arose in the excessive programme of hours and it was found necessary to combine classes (c) and (d) upon some work which they could pursue in common without too great detriment to either section. A text-book of German History (Muller) was introduced, as well as Goethe's classical drama Iphigenie auf Tauris, and some topical study of Brandt's grammar. The new elective class (e), which contained nine juniors and three theological students, read Goethe's Hermann und Dorothea and Lessing's Minna von Barnhelm. The advanced class in French (b), whose members had fared so unevenly in the first half-year, found itself in more favorable circumstances in the second, on account of being reduced in numbers and the transference of elective work to German.

The fourth hour in each week was spent upon French composition, and if the grade of work of some fell short of what was presupposed by the advanced textbook used, they received much needed drill upon the elements of the language. On the other hand the work of one or two of the class, both in quality and quantity, merits the highest praise. The class read two more plays of Racine, two more of Moliere and a modern comedy. Considerable extra reading was done by the persons cited above.

It remains to speak of the class (F) beginning French at midyear. With the large opportunities for elective work in this department, indeed with the number of hours of instruction actually required by the new arrangement of the philosophical courses, it is out of the question to divide this class with a single instructor for the department. It is manifest therefore that the circumstances of the case force a consideration of the necessity of providing additional instruction in this growing department of the College.

The department of Oratory reports no decrease of interest on the part of the students. Although it is impossible to attain technical results of an high order in the limited time, the work on the whole is very satisfactory. For the last year the work has been mainly practical. It has been found necessary to keep the two lower classes in almost purely drill work. Voice development, articulation, the presentation of the figure in correct form, are foundations for the wider displays of oratory, or dramatic art. The sophomores and freshmen read the play of Julius Cæsar, as work in analysis and synthesis. The juniors and seniors took the more ambitious play of the Merchant of Venice. The difference in treatment of these two plays by the respective classes, would be the best evidence of the value of the study of expression as a means of liberal culture. The wisdom of making the department of oratory elective is evident. Those who choose this study for a third or fourth year usually bring to it, a more or less well grounded technique, the result of the work of the sophomore and freshman years. Such students stand at the frontier of the broad field of a true expression. A knowledge of modern psychology, logic, rhetoric and English literature are fit stepping stones to the study of human expression. Of the seniors, six elected the work of this department. Of the juniors, eight. Besides the regular work of the College the professor met the students of the Divinity School once each week.

The work done in the department of Rhetoric, Logic and Intellectual Philosophy was substantially the same as described in the last report. The temporary arrangement by which four hours a week with seniors have been taken for the first six weeks of the year having now become permanent, that time will hereafter be given to the continuation of psychology, for which the time allowed in the second half of junior year has been found insufficient. That time during the last year was given to a discussion of some of the higher relations of rhetorical study, together with practice in composition. If the variety of studies pursued in this department were not already too large, an elective opportunity in this direction might be made of much practical value. Other required work of seniors was done in the second half-year, consisting of logic and themes. Fowler's textbooks, deductive and inductive logic were used, and notwithstanding necessary delay in obtaining the books, a good amount of work was done.

Junior required work was in psychology, for the second half-year, three hours a week. Textbooks employed were Seelye's "Hickok's Mental Science" and Sully's "Outlines of Psychology." During the same time a portion of the class pursued English Literature as an optional study, four hours a week, reading Chaucer, Shakespeare, Spencer and Bacon. Required work of sophomores and of freshmen in the philosophical course was done in the first half-year, comprising the study of Hill's Rhetoric and the preparation of six themes. Other elective studies were analysis of speeches, first half–year, for juniors; and English literature the entire year, for seniors. Of the former it may be said that in no other subject dealt with is the department more embarrassed by lack of time and multiplicity of studies. It might afford the means of studying American political history and related topics, and would be second in importance to no subject considered in the entire college course. Even the little that has been done during the past ten years has directed the attention of many students to matters involved in their preparation for the duties of citizenship.

The President of the College met the seniors four times a week for the first half-year in the subject of ethics, and four times a week for the second half-year in the subject of political economy, using for a textbook Laughlin's editions of Mill, supplementing the work however with full discussion and lectures, and assigning to the men subjects for independent practical research. Six seniors took the elective in ancient law three hours a week for the first half-year and five the elective in international law for the second half-year.

The accessions to the Library have not been large, but they have been valuable. Grateful acknowledgment is made of an important gift of English periodicals and reviews by Thomas G. Frothingham from the library of his father. Several volumes of these have been bound and are now in almost constant use. The purchases have included the latest edition of the Encyclopedia Brittannica as far as issued and the latest edition of Appleton's Cyclopedia. The special need of the library is a fund of sufficient magnitude to permit purchases freely of books as they are called for by professors or students. Some time in May the President addressed a communication to each alumnus asking for a voluntary contribution to such a fund. The response was cordial and generous. It is designed to continue this subscription yearly. Before many years therefore the College should be in possession of a considerable amount from this source alone. The total number of bound volumes now in the library is upwards of twenty thousand. We have the foundation of a valuable collection. If it could have a large infusion of standard English authors and the means to procure new books as they are issued it would serve our purposes admirably.

The College is indebted to the following persons for valuable lectures mainly before the students of the Divinity School. The

Rev. Edwin C. Bolles, D. D.
" A. A. Miner, D. D.
" A. J. Patterson, D. D., and the
" Henry I. Cushman.

The attention of the Trustees is called to the report of the Divinity School which is submitted herewith.

ELMER H. CAPEN.

Tufts College, September 17, 1885.

# THE DIVINITY SCHOOL.

# THE DIVINITY SCHOOL.

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*To the President:*

In obedience to the requirements of the College, I have the honor to make the following report of the condition and work of this department for the year ending September 17, 1885.

At the beginning of the year the whole number of students in this department was twenty-four. Of these two were seniors, six juniors, five were in the second year and ten in the first year. Two were graduates who pursued a post graduate course. The seniors having completed the prescribed course of study and creditably passed their final examinations were graduated with the appropriate honors of the College at its last Commencement. One of them had already received and accepted an invitation to become pastor of a young parish in New Hampshire and immediately after his graduation entered under favorable circumstances upon the duties of his vocation. The other proposed to remain in the institution for another year, at least, to widen and improve his preparation for his professional life. For the vacation intervening between Commencement and the opening of the next college year he had assumed the temporary charge of a parish at Marlow, N. H., and was in the successful discharge of his duties when he was suddenly prostrated by a violent disease and after a single week of great suffering which he bore with Christian fortitude and resignation closed a brief career that was full of promise. His was the second death, so far as I am now informed, amongst the graduates of this department of the institution.

The work of the department, in its various branches, was successfully carried on under the direction of the several professors, a more particular account of which will be found in a tabulated statement herewith communicated. I wish however to state, as I do with special pleasure, that two of the graduates of the previous year, though charged with the care of parishes and residing at considerable distance from the institution, still took upon themselves some severe courses of study and were very faithful in their attendance at appointed times for examination of their work. I mention the fact as an example worthy of imitation and venture to predict for those young men an exceptional success in the ministry.

It has been the constant aim of the faculty to elevate the standard of scholarship in this department. When first opened the course of study was limited to two years. This was subsequently enlarged to three years for college graduates and four years for all others. By a resolution of the board of trustees, the degree of bachelor of divinity is in the year 1885-6 to be confined exclusively to those who have received the degree of bachelor of arts from some college, or who at the close of their course of study shall have made such exceptional attainments as shall in the opinion of the faculty justly entitle them to such a distinction. The advantages of a college education are so obvious as a preparation for theological studies that the faculty earnestly desires that more and more of the students should come thus prepared, and at the same time the school offers strong inducements to such as are ambitious to strive for the highest honors.

This order of the trustees necessitates or at least justifies a material change in the plan of our work. Hitherto the course of studies has been arranged with reference to a four years course, and students entering from college have been made to conform in some degree to the demands of that course.

Hereafter the work of the School must be arranged primarily for a three years course, that is, for the course prescribed for bachelors of arts and the work of the four years men will as far as possible be conformed to that. It is hoped that gradually the interests of education will be so well and widely understood that the great majority of our ministers shall have enjoyed the amplest opportunities that can be afforded to fit themselves for understanding and preaching the gospel. We should be content with no second-rate scholarship, but as our faith is the broadest and most beneficent, so its advocates should have the widest and best culture.

I may be permitted to remark that as our work goes on we are gradually improving as we think in our methods of instruction. Without relying exclusively on a text book with such additions and illustrations as the experience and reading of the professor may suggest, we are coming more and more to encourage and indeed to require of the students independent research. Furnished with such authorities as may be at his command on any topic he has in hand he is sent to them to gather the facts and then taught to use them on the principles of sound reason and legitimate exegesis.

This method of instruction obviously makes a good reference library a *desideratum* if not an imperative necessity, and I know of no immediate boon so great as would be the means of providing such books as are of the highest authority and would best serve our pressing needs. To gather a good theological library sufficient for all purposes is a work of time and demands far larger funds than we can soon promise ourselves, but a few hundred dollars judiciously expended for such books as are most needed would meet a want we deeply feel.

If our expectations for the incoming class are realized, we shall find ourselves cramped for room in that part of West Hall now appropriated to its use. This suggests the oft repeated need of an edifice for the use of this School. It would add largely to its convenience and consequently to the ease and efficiency of its work, and would at the same time give importance and dignity to this department in the eyes of the world and therefore add to its influence and power.

I wish to say that we are under large obligations to the Rev. A. A. Miner, D. D., the Rev. A. J. Patterson, D. D., and the Rev. Henry I. Cushman for courses of valuable lectures delivered by them during the year. They were at once thoughtful and suggestive and brought before the students in an impressive way matters of great practical interest to their professional life. They were listened to with great pleasure and profit.

In conclusion, I am sure it is not necessary to remind you that, with all the progress this department, under the considerate care of yourself and the trustees, has been able from its beginning to make, it is still limited and far short of a complete and thoroughly equipped divinity school. Without large funds and just and comprehensive views of what such a school should be, it is of necessity a growth like all institutions of learning, and this is perhaps the best way of producing it. This began its existence in a very humble and unpretentious manner. It has in the few years of its history made great progress and accomplished much good work. Yet much remains to be done. Let us realize the fact and labor earnestly toward what is higher and better.

THOMAS J. SAWYER,

*Dean.*

TUFTS COLLEGE, September 17, 1885.

## FIRST YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Tousey. | Psychology. | Porter's Mental Science. | 6 for ⅓ year. |
| | Logic. | Bain's. | 5 for ⅓ year. |
| Prof. Harmon. | Logic. | Bain's. [For Prof. Tousey.] | 2 for ⅓ year. |
| Prof. Knight. | Rhetoric. | A. S. Hill's; Spencer's Philosophy of Style; Analysis of Selections; Eight Themes; Notes. | 3 for ⅔ year.<br>4 for ⅓ year. |
| | Greek. | Cary's Introduction to New Testament Greek; Three Chapters of St. John's Gospel. | 3 for ½ year.<br>2 for ½ year. |
| | Old Test. History. | Lectures on the Origin of the Religious Opinions of the Hebrews. | 2 for ⅓ year. |
| | New Test. History. | MacLear's; Gardiner's English Harmony; Notes. | 2 for ⅔ year. |

## SECOND YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Christian Evidences. | Row's Christian Evidences in view of Modern Thought; Lectures; Studies in Dr. Young and Prof. Rogers. | 3 for ⅔ year. |
| Prof. Tousey. | Psychology.<br>Logic. | Porter's Mental Science.<br>Lectures and Exercises on Fallacies. | 6 for ⅓ year.<br>2 for ⅓ year. |
| Prof. Harmon. | Hermeneutics.<br>Introduction to N. T.<br>Syst. Theology. | Immer's, with Notes.<br>References to Authorities in the library.<br>J. F. Clarke's Orthodoxy: Its Truths and Errors. | 3 for ⅓ year.<br>2 for ⅓ year.<br>3 for ⅓ year. |
| Prof. Knight. | Church History. | History of Church and Doctrines from the Pentecost to the Reformation. Hase; Notes and references. | 4 for ⅓ year.<br>3 for ⅓ year.<br>2 for ⅓ year. |

## THIRD YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Homiletics. | Study of Sermons of Eminent Preachers; Homiletical Analysis; Composition and Delivery of Sermons; Lectures. | 3 for year. |
|  | Christian Evidences. | Row's Christian Evidences in view of Modern Thought; Lectures; Studies in Dr. Young and Prof. Rogers. | 3 for ⅔ year. |
| Prof. Tousey. | Ethics. | Calderwood's Moral Philosophy; Bascom's Ethics; Lectures. | 4 for ⅔ year. |
| Prof. Harmon. | Exegesis. | Studies of Parables; Critical Studies of Gospels, Acts, and Hebrews; N. T. Doctrine of Resurrection. | 2 for year. |
|  | Syst. Theol. | Van Oosterzee, Vol. I; J. F. Clarke's Orthodoxy: Its Truths and Errors. | 3 for year. |
| Prof. Knight. | Church History. | Notes with references to authorities in Library, on the Origin, Doctrines, and Statistics of Modern Sects. | 2 for ⅔ year. |

## FOURTH YEAR.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Homiletics. | Lectures on Peaching; Composition and Delivery of Sermons. | 3 for year. |
| | Church Polity. | The Ecclesiastical Polity of the New Testament; the Polity of Special Churches; the Polity of the Universalist Church. | 3 for ½ year. |
| | Pastoral Theology. | Studies in Hoppin and Vinet; Notes on the basis of Van Oosterzee; Lectures | 3 for ½ year. |
| Prof. Tousey. | Natural Theology. | Paley's; Flint's Theism; Harris's Philosophical Bases of Theism; Lectures and Readings; Grey's Religion and Science. | 4 for ⅔ year. |
| Prof. Harmon. | Comp. Religion. | Maurice's Religions of the World, with references to authorities in the library. | 2 for ⅓ year. |
| Prof. Leonard. | Homiletics. | Post graduate studies: Fourteen Sermons submitted for Criticism as to structure and delivery. | |

## LECTURES, ADDRESSED TO THE WHOLE SCHOOL.

| *Lecturer.* | *Subject, &c.* |
|---|---|
| Rev. A. A. Miner, D. D. | Two Lectures on the Metaphysics of Human Relations. |
| Rev. A. J. Patterson, D.D. | Seven Lectures on the Work of the Preacher. |
| Rev. H. I. Cushman. | Two Lectures on Study and Service in the Ministry. |

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# ANNUAL REPORT

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# PRESIDENT

OF

# TUFTS COLLEGE.

1885-86.

# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

## 1885-86.

BOSTON:
PRINTED BY WALLACE SPOONER,
17 PROVINCE STREET.
1886.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen:*

THE President of the College has the honor to submit the following report for the academic year 1885-86; namely, from September 17, 1885, to September 16, 1886.

At the time of the last annual meeting of the Corporation one vacancy existed in its membership. The vacancy was subsequently filled by the election of

WALTER E. PARKER.

The only change in the Faculty is in the Walker Special Instructorship. The Trustees have appointed as Walker Special Instructor,

MILTON G. STARRETT, vice

FRED STARK PEARSON,

whose term of office had expired by limitation.

The whole number of students admitted to the College in all departments is forty-five. They are distributed as follows:

| | |
|---|---|
| Freshmen, . . | 17 |
| Juniors, . . | 4 |
| First Engineers, . | 7 |
| Special Students, . | 9 |
| Divinity School, . | 8 |
| Total. | 45 |

The whole number of degrees given in course at the last commencement was twenty-seven, as follows:

| | |
|---|---|
| Bachelor of Arts, . . | 14 |
| " " Mechanic Arts, . | 4 |
| " " Divinity, . . | 6 |
| Master of Arts, . . . | 2 |
| " " Mechanic Arts, . | 1 |
| Total, . . . | 27 |

The whole number of students enrolled in the College is one hundred and forty-two, seven more than last year, which was the greatest number that had ever been reported before. They are distributed as follows:

| | |
|---|---|
| Undergraduates, . . . | 109 |
| Divinity School, . . . | 27 |
| Graduates, . . . . | 6 |
| Total, . . . | 142 |

The increase in the number of students has rendered necessary important changes in the buildings of the College. Many students who would like to reside in dormitories, have been compelled to find rooms in private families beyond the limits of the College grounds. A new dormitory, therefore, has come to be a necessity. A substantial building of moderate dimensions, fitted with all the conveniences required in the life of students is now in course of erection on the grounds lying west of the Goddard Gymnasium. The rooms are to be arranged in suites with two bed-rooms to each study. The building will be heated by steam and will furnish accommodations for twenty-four students. It will be ready for occupancy by the beginning of the college year 1887-88.

The same considerations which rendered necessary an increase of the facilities for the lodging of students rendered imperative an addition to the lecture rooms in certain departments. The only way in which this could be accomplished without a greater outlay of money than the trustees felt warranted in making at this time was by removing the Library from the quarters which it has occupied from the beginning and transforming the space thus vacated into rooms for lectures and experimental work.

Another reason leading to the change above indicated was the fact that the Library had sometime since outgrown the dimensions allotted to it and greatly needed ampler and safer accommodations. To meet these wants a fire-proof addition to the rear end of Middle Hall has been made affording provision for the safe storage and easy handling of fifty thousand volumes. At the same time Middle Hall has been completely renovated and greatly improved. These changes are well advanced and the new library rooms will be ready in a few weeks for the reception of books. It must not be forgotten, however, that the improvements aforesaid are for the most part only temporary, designed to meet very pressing necessities in a temporary way. Whoever has closely observed the growth of the College, not merely in the number of the students, but in the number of departments and courses of study in which instruction is given, cannot avoid the conclusion that unless a very considerable and permanent enlargement is soon made both in buildings and funds the institution must suffer.

I can but repeat, what I have so often urged before, that the most pressing need is a special endowment of the Divinity School. The school should be lodged in a building or in buildings of its own. During the coming year the school will have more than thirty members, enough to require a large dormitory for their accommodation. There should be, also, besides a library and reading-room, provision for carrying on at least five recitations or lectures at once. The requirements of the school so far as facilities go, therefore, cannot be met without at least one large and permanent structure. But a building is the least important of its needs. The crowning demand is for an ample fund, the income of which will pay the salaries of teachers and the incidental expenses of the school. Such a fund, moreover, would operate practically as an enlargement of the means of the College in all its departments. In view of the noble work which the school is doing in raising up a body of educated ministers, thoroughly equipped for their work, in view of the increasing power and influence of the College, it ought not to be difficult to find some one, favored by fortune with large pecuniary means, who, out of his love for the College, for learning, and above all, for humanity and the Christian Church, would be only too glad to associate his name with an institution so grand and enduring.

But the needs of the scientific side of the institution are scarcely less pressing. Indeed, the work that is done in the several departments of science has already largely outgrown the means provided. We need larger and better furnished rooms for investigation and experiment; we need additional rooms for recitations and lectures and we need an increase in our workshops, tools and apparatus. There are certain facilities demanded which can only be afforded by a scientific building of ample proportions, properly arranged and furnished. But if we had this it would be but the beginning. We need, likewise, funds for the employment of additional teachers so that our instruction may be complete, alike in its scientific and technical aspects. All this points, of course, to a scientific school with an endowment of its own wholly apart from the funds of the College. This is what is certain to come at no distant day, for the young men, interested in this kind of instruction, are coming here in increasing numbers year by year. The work that has already been done is an earnest of what is yet to be done. There is not, I am persuaded, a better opportunity offered in connection with any institution already established, either to build a worthy and durable monument, or to confer a lasting benefit upon mankind.

There are other important needs, but I will not specify them.

Early in the year the trustees were called upon by the friends of superior education for women to say whether in the event of a special endowment of one hundred thousand dollars given for that purpose they would open the College for the education of young women on equal terms with young men. A committee of trustees, consisting of the president of the corporation and four others who were graduates of the College, was charged with the duty of ascertaining the sentiments of the constituency of the institution and also of inquiring whether its condition and circumstances would warrant so great a departure from the policy which it has pursued thus far. On the presentation of the report of the committee it was voted that it is inexpedient at present to open the College to women. That vote, however, was not intended as an expression, on the part of the trustees, of their opinion on the principle of co-education, or the practicability of its adoption in Tufts College under circumstances which may yet exist. Since that vote was taken Columbia College has decided to give and has given on examination, the same degrees to women that it gives to men. Brown University has under consideration provision for undergraduate instruction to women, though in separate classes. The trend of opinion and practice is towards a perfect equality of the sexes in the privileges of the higher education, and I am convinced that it cannot be long before Tufts College will of its own motion take the place in the ranks of progress to which the logic of events has assigned it.

I cannot refrain from expressing profound satisfaction with the provision which has been made for the enlargement of the Joy library fund to twenty thousand dollars. One-half of the income becomes available immediately for the purchase of books. It is gratifying also to observe that subscriptions to the alumni fund, which is to be devoted to the maintenance of the Library, has, during the past two years, amounted to more than eleven hundred dollars. Every alumnus of the College should take an interest in this fund and add a donation, however small, yearly to it. It should increase one thousand dollars annually. There is no interest of a college more vital than its library. Without a great store of books always increasing it cannot do its work. This is the fountain from which learning must forever draw its inspiration and nourishment. In the organization of a college it occupies the place which the vital organs do in the human body. Unless that can be kept in a vigorous and healthy condition the institution will fail in its most important functions. A very valuable addition was made in the gift of the principal part of the collection belonging to the late Dr. Thomas B. Thayer. We are also indebted for valuable donations to David H. Clark, the widow of the late Rev. J. G. Forman, and others.

I call attention to the following detailed reports of the several departments in the College of Letters.

In the department of Latin the sophomores read one book of the Satires of Horace, Cicero's Laelius, and the Germania and Agricola of Tacitus. They also had a weekly exercise in Latin composition. The freshmen read one book of Livy, Cicero's Cato Major and a book and a half of the Odes of Horace. They recited twice a week through the year in Roman history and antiquities, using Liddell's history of Rome, Rawlinson's manual and Ramsay's elementary manual of Roman antiquities for textbooks. Several illustrated lectures on classic art and antiquities were given to the class. They also recited once a week through the year in Latin composition. During the first half-year four seniors and three juniors elected Latin, reading Plautus, Terence and Cicero de Officiis. Two seniors and four juniors read Cicero de Officiis, and selections from Catullus and Lucretius during the second half-year. A few sophomores and freshmen also did extra work in Latin.

In the department of Greek the freshmen received instruction six times a week for the first half-year, and five times a week for the second half-year. Textbooks: Plato's Protagoras, Homer's Odyssey, books xvi , xvii., xviii. The amount gone over was smaller than that of last year. One hour a week was devoted to reading at sight in the authors used as textbooks. Once a week there was an exercise in Greek prose composition, As usual no textbook was used, the exercises being made out with reference to the prose authors read in the class-room. The sophomores received instruction four times a week during the first half-year. Textbooks: Lysias' Orations and Sophocles' Antigone. Again, as last year, a good deal of time was spent in analyzing the lyrical parts of the tragedy with reference to the method laid down in Schmidt's introduction to the rhythmic and metric of the classical languages. One hour a week was devoted to writing Greek prose composition. During the second half-year seven sophomores took the Greek option recitations three times a week. One hour was devoted to reading Euripides' Bacchantes, one to reading at sight Lucian's Dialogues and one to writing Greek prose compositions. Three juniors and two seniors elected Greek for the first half-year, one junior and two seniors for the second half; the time occupied was three hours a week through the year. Textbooks: Æschylus' Seven against Thebes, Aristophanes' Frogs, Aristotle's Ethics, books iv-ix inclusive. The work was done in an excellent manner by the class. Part of the time was also spent in reading at sight passages of the above authors.

In the Mathematical department there was but little variation from the reports of the few years past. The classes studied the same subjects as during the previous year; and the only change in textbooks was the substitution of Taylor's new work on the calculus for Loomis's. With each class as much of the subject studied was accomplished as the capacities of the students and the time assigned would permit.

The third class of engineers, whose instruction in the calculus is mainly given by lectures, was taught by Mr. Pearson until February and the remainder of the year by the professor. It is to be regretted that the department loses the services of Mr. Pearson, who is an enthusiastic student of mathematics and a man of remarkable mathematical ability.

The Walker Special Instructor had during the first half-year fourteen hours a week distributed as follows. Analytics with the sophomores four hours; surveying three hours; field work four hours with the first engineers; integral calculus with the third engineers three hours. The amount of work done was about the same as in the preceding years, satisfactory progress being made in each subject. In the last half of the year the work consisted of the integral calculus three hours; thermodynamics four hours; field work four hours. The instructor was absent about six weeks during which time Assistant Professor Hooper met the class in thermodynamics and Professor Brown the third engineers in the calculus. The thermodynamics was taught to the second engineers by means of lectures for the most part. A large amount of work on boilers, construction of machinery, etc., being given in connection with the textbook.

At the end of the term the class visited several mills at Lowell where they had an opportunity to inspect some excellent examples of steam engineering.

In the calculus, Todhunter's Integral Calculus was used as a textbook and the class made excellent progress.

In the Engineering department the usual text-book work with notes and illustration has been done. The need of demonstration in the study of the nature and strength of materials of engineering, has been very pressing, and now that the room formerly used as a Library is to be available for other uses, it is hoped that space in it for one or two testing machines will be granted this department. Some of the instruments and models might also find room there to advantage.

The instruction in carpentry has been carried on more systematically than last year and with great improvement in the result. Until steam power can be used it will probably be best to do without machine tools, but the day ought not to be far in the future when a well appointed wood working shop shall be equipped for the use of students. The same may be said concerning a machine shop.

During the second half-year the second electric engineers and one special had instruction at the Whittier Machine Company's works in Boston, Mr. Whittier very generously granting this privilege which has been fully appreciated by the department. Each student was placed under the care of a machinist and successively worked with planer, lathe, boring machine, shaping machine, etc., and had practice in filing at the vise. Note books were kept and inspected weekly, and questions and remarks by the professor brought up points of interest which caused the students to be observing of the various methods and arrangements in a well-organized machine shop.

The department has been the recipient of valuable gifts from the Geo. F. Blake Steam Pump Works, and from the Deane Steam Pump Company of Holyoke. There has been added to the collection of instruments a fine engineering transit by Heller and Brightly.

The required programme of study in Physics was carried through the year. Recitations and lectures four times a week during the first half, and three times a week the last half of the year.

The attendance was very regular, less excuses for absence than usual were sought for. A fair amount of interest in the study is thus indicated. An electric class studied through the year the subject of the conservation of energy using for reference books, Stewart's and Spencer's First Principles.

A course of lectures—two a week for four months was given to the senior electricals on electrical apparatus, telegraphy, telephony, lighting, etc.

Several lines of experimental research have been carried on, the results not yet ready for publication and but one monograph has been printed, namely —upon the conditions that determine the wave length of radiant energy.

The laboratory in charge of Assistant Professor Hooper is crowded. Our resources are hard pressed for conveniences. So many varieties of work, with the consequent apparatus have to be carried on at once that the pressure for room is greatly felt. To have all sorts of work carried on in one room is detrimental to the quality of all of it. The class room itself is not large enough and the classes had to be divided and the work duplicated through the whole of the last half-year. Even the proposed change of allowing the present library room to be added to this department will not give half that is needed. Not a little of the work must be postponed until the time comes when this department has proper room.

Under the direction of the Assistant Professor of Physics the required work in mechanics was undertaken by a class consisting of three juniors, nineteen sophomores, eleven second engineers, six first engineers, and three special students, who read about two hundred pages of Daniells' Physics, reciting three times a week for the second half-year. The limited floor area available and the large size of the class compelled its division.

Numerous original problems of theoretical and practical interest were from time to time presented to the class for consideration and solution. The advanced class in electrical engineering consisting of two second engineers and one special student, who in addition to twelve hours a week of laboratory work read during the year Gray's absolute measurements in electricity and magnetism, Kemp's electrical testing, Gordon's electric lighting and Thompson's dynamo electric machinery. Two original papers were prepared during the year.

The second class in electrical engineering consisting of five second engineers and two first engineers, spending four hours in the laboratory and reciting once each week, worked nearly through Glazebrook and Shaw's practical physics.

One senior in the first half-year, two second engineers, and four sophomores in the second half-year took laboratory work as an extra elective. A small class also practised a few weeks in the spring at dry plate photography.

A number of articles were made in the shop during the year; chief among them being a dynamo somewhat resembling an Edison machine, but with a different armature. This dynamo weighs about one hundred and sixty pounds; its armature is four inches in diameter, has a resistance of about a third of an ohm, and will safely carry a current of ten amperes. With two thousand ampere turns on the field, the machine generates an electro-motive force of forty-one volts at two thousand revolutions per minute.

The needs of this department are most pressing and no half-way measures can afford much relief. Twenty-five thousand dollars would put up an ample building, fifteen thousand dollars would furnish it, and one hundred thousand dollars would endow the whole physical department. Can not the friends of the institution and of education be persuaded to place upon an ample basis a department most important both as a means of technical training and of general culture.

The work in Chemistry did not differ materially from that of previous years. The original investigations that have been made and published during ing the past college year are as follows. Arthur Michael. 1. On the action of phosphorous pentachloride on ethers of organic acids. 2. Action of phosphorous pentachloride on ethyloxalate. 3. Action of phosphorous pentachloride on acetic acid and its derivatives. 4. Action of phosphorous pentachloride on acetanilide. 5. A new method of preparing bromo-derivatives of organic acids. 6. On a relation between the constitution of organic bibasic acids and the formation of their anilides. 7. Action of anilin on bromfumaric and brommaleic acids. 8. On isomerism of organic compounds. 9. Alloisomerism in the fatty series. 10. On citraconic acid as a reagent for the detection of amines. 11. Nitration of phenylhydrazine. 12. Reduction of α- and αλ- bromocinnamic acids to cinnamic acid. 13. Action of bromine on ethinyltricarboxylic acid. 14. On the constitution of trimethylenetricarboxylic acid.

A. Michael and G. M. Browne. 1. On bromcinnamic acids. 2. On bromcrotonic acids. 3. On aromatic hydroxylamines. 4. Conversion of α-bromcinnamicether into benzoylaceticether. 5. On the properties of benzoylacetcarboxylicether.

A. Michael and G. M. Palmer. On the relation between the constitution of organic bibasic acids and formation of their anilides.

A. Michael and J. Harper: On the constitution of the iodobutyric acids. 2. Action of phosphorous pentachloride on organic ethers.

In the department of Natural History, essentially the same course of instruction has been pursued as in past years. Seven students constituted the class in biology and the same number received instruction in crystallography and blow pipe analysis. The industry of these classes was very commendable and good progress was made in the several branches pursued.

The collections in the Barnum Museum have been of great benefit to the students, being easy of access and affording ready means of illustrating the several studies of the course.

During the spring four additional floor cases were constructed in the gallery of the exhibition room for containing minerals and fossils. The six floor cases, holding minerals, fossils, casts and ethnological specimens are so constructed and arranged that a student has the advantage of abundant light and nearness to the objects to aid him in his observations. Four corner and two side wall cases, intended for the exhibition of typical skeletons are at present occupied by various objects of interest, such as skeletons, shells, corals, star-fish and other invertebrate animals. A very general enumeration of the contents of the new gallery cases may give a better idea of what has been accomplished in adding to the attraction and usefulness of the museum. In these cases have been arranged and labelled nine hundred and fourteen minerals; forty meteorites; five hundred and ninety fossils; twenty-two stuffed birds of Massachusetts; forty-five sponges, sea fans and corals; three hundred and fourteen ethnological specimens; seventy coins; one human skeleton; one skeleton of chimpanzee; skeleton of oryx leucoryx; human skull, disarticulated; human skull, disarticulated after Oken; skull of porpoise; skeleton of frog; the os innominatum of a mastodon; nineteen glass models of invertebrates, and a fine stuffed baby camel from Mr. Barnum's menagerie.

In the month of December a very valuable suite of minerals and fossils illustrating the geology and mineralogy of the Black Hills, Dakota, was presented to the museum by Russell Blakely of St. Paul, Minnesota. To Wilmot L. Warren the museum is indebted for the gift of the os innominatum of a mastodon found in Washington Territory.

The young elephant, Bridgeport, having died early in the spring of this year, was mounted at Ward's establishment at Rochester, N. Y., and presented to the Fairfield Co. Historical Society of Bridgeport, Conn. by Mr. Barnum, but the society not having a suitable place in which to exhibit it, Mr. Barnum sent it to the museum for safe keeping until such time as the Historical Society should be ready to receive it. It is now installed in the museum, in the place hereafter to be occupied by Jumbo.

Bridgeport was born in Bridgeport, Conn., and was about four years old at the time of his death. He and America, another of Mr. Barnum's elephants, about six years old, are the only two elephants, born in captivity in this country or Europe, in modern times.

This report would be very incomplete if it did not bear testimony to the untiring industry of Mr. Barnum in securing new and interesting material for the museum and to his unfailing interest in everything pertaining to its welfare.

In March last, through Professor Baird, one hundred and nine species of marine invertebrates, composing series IV. of the Educational Series were received from the United States National Museum. In May following were received thirty species of coral from the same institution.

Six finely mounted birds have been given by Mrs. Thomas G. Frothingham.

In exchange for duplicate minerals, several hundred quartz crystals from Herkimer Co., N. Y., were obtained from Edgar Klock. A series of glass models of invertebrates was ordered during the year from Germany, through Professor Ward of Rochester, N. Y. Only a part of them have been received but the rest are expected to come to hand in a few weeks. The museum has been freely opened to the public during the past year, almost without restriction, and no case of injury to the cases or specimens has occurred, though the number of visitors of all ages has been unusually large.

In the department of Modern Languages in addition to the students taking the required work in elementary German and French, there was the usual large number electing in these studies. Ten members of the junior class elected French in the first half-year and recited with the philosophical freshmen,—much to the detriment of the latter, whose general plane of scholarship is naturally much below that of academic juniors and who need especial care as they enter upon college work. This difficulty was obviated in the second half-year at the cost of the department by separating the five juniors who elected, from the philosophical students, and devoting special effort to strengthening the foundation of the latter. The department in general suffered by the excessive demands on the energy of the instructor. Three academic and two divinity students elected advanced German with the philosophical sophomores continuing the study through the year. At mid-year six of the junior class who had begun German in September, voted to continue the work through the year.

In addition to these classes a small class (2) elected French, doing a large amount of reading, with advanced composition, in which they were joined by one other, once each week.

The programme of hours of instruction was thus raised to twenty for the department, which, when one considers the variety of the subjects taught and the demands of certain of them in the way of preparation on the instructor's part, is much beyond what a single person can properly be expected to perform. It is certainly far beyond the average requirements of the departments in our own and neighboring colleges.

Especial mention should be made of the new departure made during the past year, which, while not diminishing the hours of instruction given by the professor, obviated a serious difficulty heretofore experienced in instructing the first engineers in elementary French. These men come to college generally ignorant of the languages, except possibly English grammar, and have hitherto been put to learn their French with academic students who have had the Greek and Latin of the fitting school and, save one half-year's Latin, all the classics of the required course in college. The result has been almost always wholly bad. The past year, Mr. Sargent of the junior class, a bright man, with special aptitude for the languages, was employed to instruct the engineers. The engineers were no losers by the change, and the sophomore class, relieved of a serious encumbrance, was able to make unusually good progress. Undergraduate instruction in college should be resorted to only in case of extreme need, but until a trained assistant can be furnished for the department, it will doubtless be wise to continue this plan.

Too much stress cannot be put upon the great need of such an assistant. Owing to the establishment of the philosophical course with its two divisions, A and B, the number of classes in required work is largely increased. In many cases these may easily and properly become the nuclei of elective classes, but in many cases it is a violation of the promises of our catalogue to make such classifications. No one instructor can give the requisite amount of teaching if the opportunities offered in this department are embraced, and certainly the tendency is most decided to take advantage of all that is offered

The condition of the department of Oratory for the last year has been on the whole, in character and results, as satisfactory as in past years.

Three essentials seem necessary to a student's progress in the art of expression. 1. He must have natural aptitudes. 2. He must acquire art aptitudes. 3. He must have time in which to make practical both his natural and acquired aptitudes.

In the first essential our students present as good material as can be found in any of our New England colleges. Art aptitudes, contrary to received opinions in some quarters, must be acquired. If it be true that men are born to be orators, it is equally true that great orators add to their inheritance through art.

Our American colleges fail to recognize the fact, that there is to-day, a body of truth bearing upon the subject of human expression that merits the title of a philosophy, and that out of this philosophy, as a logical sequence, has come a well defined science that forms the adequate foundation for art excellence, and for all correct teaching of expression. That our colleges must ultimately recognize and provide for a broader teaching of the speech arts it takes no prophetic vision to foretell. Tufts College has already taken the lead. She has established the only chair of oratory in America. The amount of time, however, allowed this study is barely sufficient to make the student acquainted with his ignorance. It is entirely insufficient to produce results that show more than a feeble approach to what may be called a culture in the art of expression. It is unnecessary to dwell upon a point which has been so often urged.

During the year, seven seniors and thirteen juniors elected this study. The work was largely practical and consisted of the analysis and reading for expression of The Merchant of Venice by the two upper classes and of Julius Cæsar by the two lower classes. Practical vocal and gesture drills were given in both classes, and once each week students from the four classes gave recitals and readings in the large hall.

In the department of Rhetoric, Logic and English Literature the work has been without material variation from that done in the preceding year, and requires no extended description. Required studies of the several classes comprised: 1. Psychology seniors first six weeks of the year, finishing Sully's treatise; juniors second half-year, three hours a week, using Lotze's outline, with additions by lectures; 2. Rhetoric, first half-year, two classes four hours a week each, the first class composed of sophomores and philosophical freshmen, twenty-two in all; the second class composed of second and first engineers, twenty-one in all; 3. Logic, seniors second half-year, four hours a week, using Tigert's manual; 4. Themes, by all classes except classical freshmen and third engineers, in all seventy-seven men presenting the equivalent of six themes each.

Optional and elective studies comprised: 1. English literature I., study of authors, 1830-80, four seniors, first half-year; II., authors, Dryden to Byron, twelve seniors and juniors through the year; III., authors, Chaucer to Bacon, fourteen juniors and sophomores, second half-year; 2. Analysis of Speeches, chiefly American political oratory, mixed class of seven, first half-year; 3. Principles of Criticism, including the study of Kames' Elements and Gummere's Poetics, five seniors, second half-year. These classes were met three hours a week, except literature III. four hours, and analysis of speeches, two hours. Several members of the Divinity School attended a part of the literature exercises, but without the regularity expected of the college students.

The analysis of work for the year requires no commentary to show that the department is heavily burdened and cannot be in high degree efficient.

No suggestions of change are here offered, but it is to be hoped that consideration of the matter will before long be possible. Very great service would be rendered in the literature subjects, if the Library could afford the purchase of such books as make up the usual selections from authors read, in number sufficient to supply the classes. Many of these books would be used only from one to four weeks in each class, and they would last a term of years. Few students are able to purchase all the works from which selections are made during the long period, one and a half to two and a half years, that many are desirous of spending in their study. A moderate sum expended in this way would greatly assist the professor in arranging his courses of study, and would give a most desirable impetus to the work.

The accessions to the Library for the year have been more than for several years past, in fact more than the whole number of volumes added during the last three years; not since the purchase of the books from the Chapin library have there been so many added in one year. The largest donation and most valuable addition came from the estate of the late Dr. Thomas B. Thayer, and numbered two hundred and ninety-four volumes. From the estate of the late Rev. J. G. Forman we received one hundred and thirty volumes, from Ebenezer Francis, fifty volumes, from Miss Popkin of Cambridge, forty-seven volumes and from David H. Clark, seventy-seven volumes. The purchases for the year number one hundred and two volumes, and include a number of volumes of English

Reviews, thirty-one volumes of a German chemical periodical, and a number of books for the use of the divinity students. Before another report is due, we shall be in new and comfortable quarters, and hope to have many additions from our library funds.

The attention of the trustees is called to the report of the dean of the Divinity School which is submitted herewith.

ELMER H. CAPEN.

Tufts College, Sept. 16, 1886.

## PRESCRIBED STUDIES (SENIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Pres. Capen. | Pol. Economy. | Walker's, with Lectures. |
| | Ethics. | Calderwood's. |
| Prof. Marshall. | Geology. | Le Conte's, with Lectures. |
| Prof. Shipman. | Logic. | Tigert's. |
| | Rhetoric. | Six Themes. |
| Prof. Bray. | App. Mechanics. | Rankine's and Lanza's. |
| | Civil Engineering. | Mahan's; Shreve's Bridges and Roofs. |
| | Roads& Railroads. | Gillespie's and Henck's. |
| | Drawing and Field Work. | |

## PRESCRIBED STUDIES (JUNIOR YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Prof. Marshall. | Botany.<br>Zoology. | Gray's Lessons and Manual, with Lectures.<br>Packard's. |
| Prof. B. G. Brown. | Calculus. | Taylor's Differential and Integral Calculus. (Eng.) |
| Prof. Shipman. | Psychology.<br>Rhetoric.<br>Eng. Lit. | Sully's.<br>Six Themes.<br>British Authors, (Chaucer to Bacon) (*optional with Chemistry*). (14 for ½ year.) |
| Prof. Dolbear. | Physics.<br>Astronomy. | Daniell's.<br>Peck's. |
| Prof. Fay. | German. | Theoretical Grammar in Lectures, with Brandt's for reference; Rosenstengel's Reader of German Literature. |
| Prof. Michael. | Chemistry. | Inorganic Chemistry, Lectures.<br>Organic Chemistry, Lectures (*optional with Eng. Lit.*) (3 for ½ year.) |
| Prof. Hooper. | Physics. | Glazebrook and Shaw's. (Eng.) |

## PRESCRIBED STUDIES (SOPHOMORE YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Prof. Marshall. | Physiology. | Walker's, with Lectures (*optional with Greek*). (8 for ½ year.) |
| Prof. Schneider. | Greek. | Sophocles' Antigone; Lysias' Orations; Reading at sight; Greek Composition.<br>Antigone continued; Reading at sight; Greek Composition (*optional with Physiology*). (7 for ½ year.) |
| Prof. Dearborn. | Latin. | Horace, Satires; Cicero, Lælius; Tacitus, Germania and Agricola.<br>Translation of English into Latin. |
| Prof. B. G. Brown. | Mathematics. | Briggs' Analytic Geometry, with Lectures. (one section.) |
| Prof. Shipman. | Rhetoric. | Welsh's; Six Themes. |
| Prof. M. T. Brown. | Oratory. | Lectures; Declamations. |
| Prof. Fay. | French. | Macmillan's Fasnacht's Progressive French Course, Parts I. and II.; Lacombe, Histoire du Peuple Française. |
| Prof. Bray. | Engineering. | Drafting and Field Work. |
| Prof. Hooper. | Mechanics. | Daniell's. |
|  | Physics. | Thompson's Dynamo Electrical Machinery; Gordon's Electrical Lighting; Kempe's Handbook of Electrical Testing. (Eng.) |
| Mr. Pearson. | Mathematics. | Bowser's Analytic Geometry; Steam Engine. (one section.) |

## PRESCRIBED STUDIES (FRESHMAN YEAR).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* |
|---|---|---|
| Prof. Schneider. | Greek. | Xenophon, Memorabilia; Plato, Protagoras.<br>Homer, Odyssey, Books XVI.-XVIII.; Reading at sight; Greek Composition. |
| Prof. Dearborn. | Latin. | Livy, Book XXI.; Cicero, Cato Major; Horace, Odes, Books I.-III.<br>Harkness's Latin Composition, Part III.; Extempore exercises.<br>Roman History, Liddell, Rawlinson's Manual.<br>Roman Antiquities, Ramsay, with Lectures.<br>Lectures on the History of the Latin Language and Literature. |
| Prof. B. G. Brown. | Mathematics. | Wells's Algebra; Welsh's Solid and Spherical Geometry; Wells's Trigonometry. |
| Prof. M. T. Brown. | Oratory. | Declamations; Lectures. |
| Prof. Fay. | French. | Macmillan's Fasnacht's Progressive French Course, Part III.; Dramatists of the Classic Period; Modern Novelists. (Phil.) |
| Prof. Bray. | Engineering. | Church's Descriptive Geometry; Drafting. |
| Mr. Pearson. | Engineering. | Murray's Surveying; Field Work. (Eng.) |

## ELECTIVE STUDIES.

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* |
|---|---|---|---|
| Pres. Capen. | Law. | Maine's Ancient Law.<br>Wolsey's International Law. | 2 for year.<br>4 for ½ year. |
| Prof. Marshall. | Biology. | Huxley and Martin's. | 2 for year.<br>4 for ½ year. |
| | Mineralogy. | Dana's; Platner's Blow-pipe Analysis, Laboratory Work. | 3 for ½ year. |
| Prof. Schneider. | Greek. | Æschylus, Seven against Thebes; Aristophanes, Frogs; Aristotle, Ethics, Books I.–III.; Euripides, Bacchantes; Homer, Il., Books IV.–IX. | 4 for ½ year.<br>3 for ½ year. |
| Prof. Dearborn. | Latin. | Cicero de Officiis, Books I. and II.; Plautus's Menæchmi; Terence's Adelphi; Selections from Catullus and Lucretius.<br>Cicero's Tusculans, Book I. | 6 for year.<br>4 for ½ year. |
| Prof. Shipman. | Rhetoric.<br>Eng. Lit. (*a*)<br>Eng. Lit. (*b*) | American Oratory.<br>British and American Authors (1830–1885.)<br>Criticism. | 7 for ½ year.<br>9 for ½ year.<br>12 for year. |
| Prof. Dolbear. | Physics. | Conservation of Energy.<br>First Principles. | 5 for ½ year.<br>3 for ½ year. |
| Prof. M. T. Brown. | Oratory. | Special Drill in Reading and Declamation. | 20 for ½ year. |

## ELECTIVE STUDIES (CONTINUED).

| *Instructor.* | *Subject.* | *Text-Books—Nature and Amount of Work.* | *No. of Students.* |
|---|---|---|---|
| Prof. Fay. | French. | Dramatists of the Classic Period; Modern Novelists; Macmillan's Fasnacht's Progressive French Course, Part III. | 18 for ½ year. |
| | German (*a*) | Goethe, Hermann und Dorothea; Selections from Rosenstengel's Reader. | 9 for ½ year. |
| | German (*b*) | Schiller, Don Carlos, Die Jungfrau von Orleans. | 7 for 1st ½ year. |
| | | Die Jungfrau von Orleans; Müller's Geschichte des Deutschen Volkes. | 5 for 2d ½ year. |
| Prof. Michael. | Chemistry. | Organic Chemistry,<br>Inorganic Chemistry.<br>Quantitative Analysis.<br>Qualitative Analysis. } Laboratory Work. | 4 for ½ year.<br>6 for ½ year. |
| Prof. Bray. | Engineering. | Orthographic Projection, Mechanical Drawing. | 1 for year. |
| Prof. Hooper. | Physics. | Laboratory Work. | 6 for ½ year. |

NOTE.—Phil. denotes Philosophical students; Eng. Engineers. For hours per week and number of students in prescribed course see catalogue and the President's report of the respective departments.

# THE DIVINITY SCHOOL.

# THE DIVINITY SCHOOL.

*To the President:*

In obedience to the requirements of this institution I have the honor respectfully to report the condition and work of the Divinity School for the College year, 1885-86.

At the opening of the year the number of names on our student-roll was twenty-six, namely, in the senior class, six; in the middle class, four; in the junior class, eleven; in the sub-junior class, four; while one was pursuing a special course of study. During the year one student entered the junior class, thus making the number twenty-seven.

The senior class, consisting of six members, after completing its prescribed course of study and creditably passing its proper examinations was duly graduated at the Commencement in June, and all the individuals composing it have already entered upon the duties of their chosen profession. One who came from Ohio four years ago, returned thither immediately after his graduation and is engaged in the work of the ministry there. One has taken charge of an historic parish in New Hampshire; three have assumed pastorates in Massachusetts, while one is now for the time occupied in supplying vacant pulpits in the neighborhood of Boston and the surrounding country. As has often been the case with our students before, all those now permanently located had practically made arrangements for their settlement previous to their graduation, having made the acquaintance with their respective parishes by ministerial service in them during the latter part of their studies here. Parochial relations thus formed have the advantage of being a result of the mutual knowledge and attachment of the parties sustaining them, and have the promise of being more permanent and satisfactory than when hastily contracted on slight acquaintance with each other.

The work of the school during the year has been carried on with the usual care and efficiency on the part of the professors as well as with commendable industry and earnestness on the part of the students, and I trust with increasing success. But for a detailed account of the various branches of study, and the time spent, and the work done in each, I beg to refer you to the tabulated statement made up from the several professors' registers, herewith transmitted. Allow me to add, however, that without at all affecting the course of study, some changes, as I suggested in my last report, have been made in the method of study and instruction. In branches that easily admit the method we make less use than formerly of textbooks. We require a wider research on the part of the student in the consulting library. Instead of formal lectures or recitations from text-books, in cases where the subject permits it, topics arranged in their natural order are assigned the clssses and the students are sent, under the direction of the professor, to the various authorities within their reach for personal inquiry and investigation; subsequently the class is examined on what it has done, specific references to authorities required, opinions compared, criticisms offered, and as far as possible the truth ascertained. This method of work is thought to offer several important advantages. It teaches the student how to use books, makes him acquainted with the best authorities; and the different views of men, and gradually qualifies him to judge for himself among the conflicting opinions of authors, and in various ways aids in making him careful and accurate. I hardly need remark that this method of work renders a good consulting library, not only important but in a manner indispensable. At present, it is imperfect and greatly needs enlarging and improving. Among the various difficulties under which we labor there is none, perhaps, where a moderate sum would afford more suitable relief.

It has been the constant wish and aim of this school to raise the standard of scholarship among its students as fast and far as circumstances would allow. We could all desire that every person entering the school might bring with him the results of the best training which our American colleges could give ; and we should gradually if not rapidly approach this desideratum if ministers and people alike properly appreciated the inestimable blessings of clerical education. Let us not, however, be insensible to what has been accomplished in this direction within the last thirty-five years. There are many still living, who can remember the time when in their full manhood there was not in the body of the church to which we belong a single school in the whole length and breadth of the land ; and what was if possible still more discouraging, there was no public demand and seldom an expressed wish for one. All this is now changed, and if we are not doing everything we could wish, or everything that we are able to do let us be thankful that the better thought of pulpit, press and people is becoming every year more in favor of education and more ready to respond to its recognized needs.

There is on every hand a call for educated and efficient ministers. Our schools are ready to prepare young men for the work, and all that is wanting is candidates to enter and avail themselves of the advantages they offer. Here is a field in which our ministers, parishes and Sunday schools all over the country could co-operate in labor. Let the heart of preachers and people be quickened to a better appreciation of the inestimable worth of our holy religion, and a love for it in some measure proportionate to the blessings it confers, and there will soon be no lack of young men anxious to consecrate their lives to its proclamation. Nor will the means be lacking to prepare them for the sacred service.

During the year our school has been favored with various lectures from the gentlemen appointed to that office by the trustees. Among these, I take pleasure in acknowledging a series by the Rev. G. T. Flanders, D. D., on the oriental religions, and several by the Rev. H. I. Cushman, and the Rev. E. L. Houghton, on subjects of special interest to our students. For these valuable services, gratuitously rendered, these gentlemen merit the thanks not only of the Divinity School but of all the friends of clerical education.

I cannot close without again calling attention to the great need the school has of better accommodations. During the past year the number of students in this department was greater than provision were made for, and two or three were obliged to find rooms outside; and if we may judge from the present prospects of the incoming class, the difficulty will be considerably increased next year. We need, almost beyond expression, a Divinity hall, provided with a suitable chapel, recitation rooms, library and rooms sufficient for the comfortable accommodation of our growing school. We have an admirable location for such a building, somewhat removed as we could wish, from the other edifices of the institution, and yet, near enough to give the school all the advantages of the College. The service the school has already rendered, and is year by year rendering to the church, gives it a large claim to such recognition.

Respectfully submitted,

THOMAS J. SAWYER,

*Dean.*

## SUB-JUNIOR CLASS.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Tousey. | Psychology.<br>Logic. | Sully's Psychology.<br>Bain's. | 6 for ⅓ year.<br>5 for ⅓ year. |
| Prof. Harmon. | Greek.<br>Logic. | Gospel of John.<br>Bain's. (For Prof. Tousey.) | 6 for ⅓ year.<br>2 for ⅓ year. |
| Prof. Leonard. | Rhetoric. | A. S. Hill's; Analysis of Selections; Six Themes; Notes on Style. | 3 for ⅓ year.<br>1 for ⅓ year. |
| Prof. Knight. | Greek. | Cary's Introduction to New Testament Greek; Three Chapters of St. John's Gospel. | 4 for ⅓ year. |

## JUNIOR CLASS.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Sawyer. | Hebrew. | Hebrew Grammar; Three Chapters of Genesis. | 2 for ⅔ year. |
| Prof. Leonard. | Homiletics. | History of Preaching; Structure of the Sermon; Analysis in the Gospels. | 2 for ⅓ year.<br>1 for ⅓ year. |
| Prof. Tousey. | Logic. | Lectures and Exercises on Fallacies. | 2 for ⅓ year. |
| Prof. Harmon. | Hermeneutics. | Immer's, with Notes exemplifying the principles, from the Parables and other passages. | 3 for year. |
| Prof. Knight. | Biblical History. | History of the Jews until the time of Christ; Life of Jesus Christ; and of St. Paul. | 3 for ⅓ year.<br>4 for ⅓ year. |
| | Church History. | History of Church and Doctrines from the Pentecost to the Peace of Westphalia; Notes and references. | 4 for ⅓ year.<br>2 for ⅓ year.<br>5 for ⅓ year. |

## MIDDLE CLASS.

| *Instructor.* | *Subject.* | *Text-Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Homiletics. | Study of Sermons of Eminent Preachers; Homiletical Analysis; Composition and Delivery of Sermons; Lectures. | 3 for year. |
| Prof. Tousey. | Ethics. | Calderwood's Moral Philosophy; Bascom's Ethics; Lectures. | 4 for ⅔ year. |
| Prof. Harmon. | Exegesis. | New Testament Theology. | 2 for ½ year. |
| | Syst. Theology. | Dictations on Special Doctrines. | 3 for ½ year. |
| | Comp. Theology. | Non-Christian Systems; Notes, with references to authorities in the Library. | 2 for ½ year. |
| Prof. Knight. | Church History. | Notes, with references to authorities in the Library, on the Origin, Doctrines, and Statistics of Modern Sects. | 2 for ⅔ year. |

## SENIOR CLASS.

| *Instructor.* | *Subject.* | *Text Books—Nature and amount of work.* | *Hours per week.* |
|---|---|---|---|
| Prof. Leonard. | Homiletics. | Lectures on Preaching; Composition and Delivery of Sermons. | 4 for ⅓ year.<br>3 for ⅓ year.<br>2 for ⅓ year. |
| | Church Polity. | The Ecclesiastical Polity of the New Testament; the Polity of Special Churches; the Polity of the Universalist Church. | 4 for ⅓ year. |
| | Pastoral Theology. | Lectures on Qualifications and Duties of the Pastor, and on Organized Work in the Parish. | 4 for ⅓ year. |
| | Natural Theology. | Grey's Religion and Science. (For Prof. Tousey). | 1 for ⅓ year. |
| Prof. Tousey. | Natural Theology. | Paley's; Flint's Theism; Butler's Analogy; Lectures and Readings; Grey's Religion and Science. | 4 for ⅔ year. |
| Prof. Harmon. | Comp. Religion. | Non-Christian Systems, with references to authorities in the Library; Notes. | 1 for ⅓ year. |

## LECTURES, ADDRESSED TO THE WHOLE SCHOOL.

| *Lecturer.* | *Subject, &c.* |
|---|---|
| Prof. Sawyer. | Fifteen Lectures on Theology. |
| Rev. G.T. Flanders, D.D. | Six Lectures on Oriental Religions. |
| Rev. E. L. Houghton. | Two Lectures on New Testament Doctrines. |
| Rev. H. I. Cushman. | Two Lectures on the Historical Method of Bible Study. |

87

# ANNUAL REPORT

OF THE

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

# PRESIDENT

OF

# TUFTS COLLEGE.

1886-87.

# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

## 1886-87.

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BOSTON:
PRINTED BY WALLACE SPOONER,
17 Province Street.
1887.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*
*The Trustees of Tufts College.*

*Gentlemen:*

The President of the College has the honor to submit the following report for the academic year 1886-87; namely, from September 16, 1886, to September 22, 1887.

Both the Corporation and Faculty remain the same as last year, without change.

The whole number of students admitted to the College in all departments is thirty-nine. They are distributed as follows:

| | |
|---|---|
| Freshmen, | 15 |
| First Engineers, | 6 |
| Special Students, | 4 |
| Divinity School, | 9 |
| Graduates, | 5 |
| Total, | 39 |

The whole number of degrees given in course at the last commencement was thirty-two, as follows:

| | |
|---|---|
| Bachelor of Arts, . . | 18 |
| Bachelor of Mechanic Arts, . | 10 |
| Bachelor of Divinity, . . | 4 |
| Total, . . . | 32 |

The whole number of students enrolled in the College during the year is one hundred and forty-one, one less than last year, the largest number that had ever been reported. They are distributed as follows:

| | |
|---|---|
| Undergraduates, . . | 105 |
| Divinity School, . . | 29 |
| Graduates, . . . | 7 |
| Total, . . . | 141 |

The fact that the College has increased in numbers during the last two years has some significance; especially if it be remembered that the fitting schools upon which we have been accustomed to rely for our supply of students have almost entirely failed to send us any in either of these years. It is a pretty strong indication that the College has obtained a hold upon the confidence of the public at large which will hereafter render it in a measure independent of any special sources of patronage. The growth of a young college in a community like New England, where well-established educational facilities are abundant, is necessarily slow. For a time it will be shut up for its support within certain lines of special interest. No matter how high its aims, nor how broad and thorough its work, it will not attract much attention except from the constituency which has immediately created it, until it has sent forth men equipped for the world's work in those departments of activity where education is recognized as one of the leading forces. For this at least a generation of history is needed. The last Commencement marked a period of exactly thirty years since the first class was graduated, and we find ourselves now at the beginning of a new stage in its development. Through the work it has done, the men who have gone forth from it bearing the stamp of its culture, it now challenges public attention and regard, and we may not unreasonably hereafter look for a fair percentage of attendance from among those young men who bestow their favor upon institutions of recognized and established merit.

This phase of our development should lead us to consider with interest the relations we sustain to the community about us. The college is the climax of our system of public education. If its relation to the public weal is properly maintained, there will be a constant and unbroken flow of vital interest from the lowest grade of the primary school up to the most advanced course of graduate study in the university. How is this to be secured? By making the college the resort from generation to generation of those only who wish a certain stereotyped form of education? I cannot help thinking that the college has been held too long to this narrow conception of its function. The demands of education in our time are wider and higher and more varied than that. The fact that the high schools of Massachusetts and other New England states send out numbers of youths every year trained by two distinct lines of study, the one classical, fitting them to meet the traditional requirements of the New England colleges, the other general, and to some extent, perhaps, scientific, having a more direct relation to the actual needs of daily life, should lead us to inquire whether the popular demands concerning the higher education are fully met by maintaining inflexibly a curriculum which excludes from the advantages of collegiate study and drill so large a percentage of our brightest and best-trained graduates of the secondary schools. The youth who, at the end of a long period of training in the secondary school, looks out upon the field of education and feels the need of other and higher courses of study should find some door opening to him with welcome hospitality.

It is the opportunity of the college to add to its membership men of serious and noble ambition who would be a genuine contribution to its energy and life and at the same time to discharge a great public obligation. The need has arisen, and if the college does not meet it other agencies will be found. Already some of the technical schools of the country are providing courses of general study for men who have had only an English training in the public schools, but who desire a more advanced education. But the technical schools are not the places for them. The spirit of the technical schools is wholly foreign to the purposes of these men. What they need is the serene atmosphere of those schools where learning is pursued for its own sake. It may be said, "Let the colleges admit them as special students and permit them to take up and carry on, side by side with the regular students, such studies of the general course as their previous education has fitted them to master." To some extent this has been done. But evidently it is not what is wanted. Men who are capable of taking up severe studies and carrying them on with energy and profit should have courses provided for them which will meet the essential requirements of liberal culture. Moreover, if they can do in four years work which does not fall below, either in amount or quality, what is done by the average college graduate, why should they not have the same degree as the reward of their efforts and faithfulness? If the New England college is to keep its hold upon the popular interest, if it is to continue to receive in large measure the public confidence and grow with the growth of the country, it must not fail to adapt itself to the exigencies which have arisen.

The completion of Dean Hall has given us sufficient dormitory accommodations to meet our present needs. But the special efforts that have been made to increase the ministry during the past year have already brought a larger number of students to the Divinity School, and will doubtless soon cause a still greater increase. It is not unlikely that within the next two years there will be fifty men in the school. This will strain our accommodations to the utmost. The quarters now assigned to divinity students will not contain the half of them. The need becomes more urgent every year for a divinity hall and for a special endowment of the school. Fifty thousand dollars would be ample for the construction and furnishing of such a building. One hundred thousand dollars in addition to the funds which we already have that are applicable to the maintenance of the school would render it in a measure independent, and enable it to do its work more easily and effectively than it can be done at present. Benefactors who will make provision for these necessities may be assured that their names will be associated forever with the development of a most beneficent and holy enterprise.

A bequest of twenty-five hundred dollars has been received from the late Robert Fears. The College has also come into possession of twenty-five thousand dollars from the estate of the late Henry B. Pearson, and in accordance with the terms of the bequest the same has been applied to the founding of a professorship in a branch of natural science. The department of engineering has received valuable donations as follows: A twenty-five horse power engine from the well-known manufacturer of engines, B. F. Sturtevant; anvils, forges and other mechanical implements from the Honorable F. M. Ames; a boiler from the Honorable Charles Whittier, President of the Whittier Machine Company. The basement of the main college building will be fitted to receive these implements and converted into a laboratory for students in the different branches of civil, mechanical and electrical engineering. This will well serve a temporary end. But the time cannot be far distant when a more commodious work-shop will be required. We need a building fitted with all the appliances for advanced scientific instruction, and a special fund which will place this branch of our work upon an independent foundation. If we had these there would be no difficulty in increasing at once the number of students in this department.

The sum of two hundred and fifty dollars has been placed in the hands of the Treasurer from the late Mrs. Cornelia B. Skinner, to serve as the beginning of a fund for opening the College to women. The amount is small, but it is none the less significant; and, for myself, I may venture to express the hope that it will ere long be the means of attracting other and larger donations until the Trustees shall have at their command an amount sufficient to enable them to provide for the higher education of women.

The library has been removed from its old quarters to the building newly prepared for it. A great gain has already been experienced by the change. The rooms are comfortable and commodious. The books are more easily handled. The consulting room is accessible to the students and is much resorted to. The additions to the library were greater than for many years previous, comprising nearly two thousand volumes. Among these additions I take pleasure in reporting the gift of one thousand volumes from the Rev. Edward J. Young, D.D. This was the largest single donation of books the College has ever received. They are all of them works of permanent value, being for the most part treatises in the German language upon theological and philosophical subjects, though a considerable number are in Hebrew, Greek, Latin and French. The other principal donors to the library are Mr. Thomas G. Frothingham and the Rev. A. A. Miner, D.D. The income from the Joy Fund has permitted a larger number of volumes to be purchased than heretofore, and a still larger sum will be available next year. The Alumni Fund now amounts to nearly fifteen hundred dollars. It is increasing slowly and should commend itself to the generous interest of every graduate.

I call attention to the following detailed report of the several departments in the College of Letters.

The work of the department of Latin was as follows. During the year the sophomores read two books of the Satires of Horace, Cicero's Laelius, and the Germania and Agricola of Tacitus. They also had one exercise a week for the first half-year in Latin composition. The freshmen read Cornelius Nepos, Cicero's Cato Major, and two books of the Odes of Horace. They had two recitations a week for the year in Roman history and antiquities, using Liddell's History of Rome, Rawlinson's Manual of Ancient History, and Ramsay's Elementary Manual of Roman Antiquities, and one exercise a week for the year in Latin composition. Several lectures were given to the class on the history of the Latin language and literature.

Five seniors and five juniors elected Latin the first half-year, reading selections from Juvenal and Cicero's Brutus. Four seniors elected Latin for the second half-year, reading Cicero's Brutus and the Mostellaria of Plautus. One senior also did considerable extra work, reading the Letters of Pliny, the younger.

The freshmen received instruction in Greek six times a week for the first half-year, and five times a week for the second half. The textbooks were: Plato's Apology and Tyler's Iliad, books xvi and xvii; also, Lysias' orations. One hour a week was devoted to reading at sight in the authors used as textbooks. Instruction was also given to the class once a week in prose composition; as usual no textbook was used here, the exercises being made out with reference to the prose authors read in the class-room.

The sophomores received instruction four times a week from the beginning of the college year to the end of March. Textbooks: Philippics of Demosthenes and Æschylus' Seven against Thebes. Again, a good deal of time was spent in analyzing the lyrical parts of the drama. One hour a week was devoted to writing prose compositions. From the end of March to the end of the college year one sophomore chose Greek as an extra elective three times a week, during which time he finished Æschylus' Seven against Thebes and prepared some Greek prose compositions, besides reading at sight some of Lucian's dialogues.

One senior and one junior elected Greek, three hours a week throughout the year. Textbooks:

Greek Historians, Euripides' Medea, and Demosthenes' Hellenic orations. A part of the time was also spent in reading at sight passages of the above writers, and in writing Greek prose compositions. The work was done throughout in an excellent way, especially by the member of the senior class who richly deserved honors in classics.

The work in the Mathematical department differed but little from that of the previous year. The Professor taught the freshmen and first-year engineers in Algebra as far as the theory of equations, solid and spherical geometry, and trigonometry through spherical right triangles. The sophomores and second-year engineers after completing spherical trigonometry were divided into two sections. Those who had attained a high per cent were, according to the requirement of the Walker Special Instructorship, assigned to Mr. Starrett, the remainder of the class being instructed by the Professor. Both divisions were taught plane analytic geometry. The second and third classes of engineers had instruction in calculus three times a week throughout the year. During the second half-year two members of the third-year engineers met twice a week for the study of the calculus of imaginaries. One junior and one senior elected calculus with the second-year engineers.

The Walker Special Instructor had, during the first half-year, eleven hours per week distributed as follows: analytic geometry, four hours; surveying, three hours; field-work and drawing, four hours. The class in analytics consisted of one section of the sophomores with the second engineers. Wentworth's Analytic Geometry was used as a textbook, and excellent work was done by the class. One junior elected surveying with the first engineers; Gillespie's textbook was used, and the instruction was carried on in connection with practical work in the field. The work, during the last half-year, consisted of descriptive geometry three hours; field-work and drawing eight hours. One senior, one junior, and four electrical engineers elected drawing during the last half-year, and good progress was made by all.

The work in the department of Engineering has of necessity been similar in kind to that of the preceding years, and about the same in amount. The great want in the study of the strength and nature of materials has been a suitable testing machine. When this is supplied, as is hoped will be the case soon, something of the laboratory method will be adopted in this branch of study. A few machine tools will be necessary in preparing specimens for testing; and it is desired to have the students who study the steam-engine have some practice with them in making pieces of mechanism and preparing apparatus necessary in the experimental work of an engineering laboratory. The new engine and boiler will aid very much in carrying out this work, sufficient power being supplied the tools with but little expense above that necessary to heat the building with steam.

In the department of Physics the junior class attended during the year according to the schedule time, four times a week for the first half-year and three times a week for the last half-year. Recitations were interspersed with numerous lectures upon the various topics that were considered, and these were as fully illustrated by experiments as the resources of the department would allow. An elective class in physics was met twice a week throughout the year. The subject of the conservation of energy was taken up, and textbooks by Stewart and Spencer were read and much was added in lectures.

The Professor had three hours a week with one student who studied Hemholtz's Sensation of Sound. During the second half-year a series of two lectures a week was given to the senior electrical engineers on the utilization of electricity in the various arts.

In all of these classes there was a fair degree of interest manifested and considerable effort was made by the most of those in attendance. It is a matter of some surprise, however, that such a number of students that have needed constant watching and bracing up through their college course, for all sorts of reasons, should so soon find good positions on leaving college and at once begin to be industrious and responsible citizens.

During the past year the lecture-room of the physical department was made somewhat larger by removing the apparatus cases into the vacated library-room. This gives room for about thirty students at once. The remainder of the library-room is now used as a part of the physical laboratory, the older one being altogether appropriated to electrical work. When the new engine is ready for service there will be the possibility at once of providing all the light at the College that will ever be needed for the lecture-rooms, halls and chapel. The rooms should be properly wired for such use of electricity. The engine may then be run whenever it is needed.

Under the direction of the Assistant Professor of Physics, the class in mechanics consisting of sixteen sophomores, five second engineers, three first engineers, and two special students, met three times a week for the second half-year, and read about two hundred pages of Daniells' Physics. As usual, numerous practical problems were presented to the class for solution, both in and out of the class-room. The third electrical engineers, five engineers and one special student, read Gordon's Electric Lighting, Kemp's Electrical Testing, and Thompson's Dynamo Electric Machinery, besides working twelve hours a week in the laboratory. In the course of the year this class constructed several pieces of apparatus, chief among them being a one hundred volt Gramme dynamo and a Brackett dynamometer, the latter with the kind permission of the inventor, Prof. C. F. Brackett of Princeton. The construction of these machines was rendered possible by the kindness of the Redding Electrical Company of Boston, who allowed the heavy metal work to be done in their shop and furnished the countershaft and pulleys for the dynamometer. The second class in electrical engineering consisting of four engineers and one junior worked through Glazebrook and Shaw's Practical Physics, spending six hours a week for the year in the laboratory. Four other students elected laboratory work; none of them, however, pursuing it for more than half a year. The needs of this department are as urgent as ever; we need more apparatus and more tools, and above all we need more and suitable space to place and use them.

The work in Chemistry did not differ materially from that of previous years. The course in Inorganic Chemistry was attended by thirty students, while six students worked in the chemical laboratory throughout the college year, and ten took a half-year's course of work.

The following investigations represent for the past year the research work done in the chemical department: Arthur Michael. 1. On the addition of sodium acetacetic ether and analogous sodium compounds to unsaturated organic ethers. American Chemical Journal, Vol. 9. page 112. 2. On some new reactions with sodium acetacetic and sodium malonic ether. Ibid, Vol. 9. page 124. 3. Researches on alloisomerism. Ibid, Vol. 9. page 180. 4. Preliminary notes. Ibid, 9. 219. 5. On the constitution of levulenic and maleic acids. Ibid, 9. 364. 6. On the formation of indigo blue. Journal of Practical Chemistry, 35. 254. 7. On the behavior of oxalic ether towards resorcinol. Ibid, 35. 510. 8. On some new reactions with amides and ureas (unpublished). 9. On some new reactions with guanidmes (unpublished).

A. Michael and G. M. Browne. 1. Researches on alloisomerism, II, American Chemical Journal, 9. 250. 2. On isomerism in the cinnamic acid series. Gazette of the German Chemical Society,

20. 530. 3. On some new reaction with guanidmes, II. (unpublished).

A. Michael and E. A. de-Schweinitz. On the addition of sodium acetacetic ether to unsalurate organic ethers, II. (unpublished). 2. On some new reactions with amides and ureas. American Chemical Journal, 9. 221.

In the department of Modern Languages the class in elementary German, required, for the first half-year, consisted of eleven juniors, four sophomores (Ph.) and five special students. They used Meissner's Grammar, fifty-two lessons, and read the Haus und Kindermarchen of the Grimm brothers and a portion of Hauff's Das Kalte Herz. In the second half-year this work was continued, as an elective by seven juniors and one theological student, but as a required study by the philosophical students. Das Kalte Herz was completed and Gothe's Hermann und Dorothea afterwards read. One hour a week was devoted to composition in the last half-year, in which attendance was optional for juniors. The opportunity was quite generally embraced.

The two advanced classes in German were reconstructed on a different basis from that of the preceding year. Those who had had the study a single year were divided into two sections on the basis of their capacity for work. The less well prepared were assigned work in historical prose of moderate difficulty—Muller's Deutsche Geschichte. Reciting three times a week for the year, they read pp. 279–346, or the history of the thirty years' war and to the beginning of the French revolution. They also recited one hour a week in composition with the class mentioned above. The more advanced section of this class, seven seniors, were united with four men who had pursued the study much longer, and took up Gothe's Faust. In the first half-year with three recitations a week the first part of the poem was completed together with portions of Duntzer's commentary upon the same. In the second half-year this section, reduced to seven, undertook the second part of Faust. In attempting this somewhat hazardous experiment, it seemed wise to give especial prominence to the commentary, and class work in this was carried *pari passu* with the text of the poem, which it elucidated in advance. It was found possible to cover only two acts of Part II. with the corresponding part of the commentary in the half-year. This experiment would not have been undertaken had it not been a class of men of more than usual intellectual maturity, and experience served to confirm previous opinions regarding the adaptability of Faust as a text for average college classes. The experiment, however, proved by no means uninteresting to pupils or teacher.

At the beginning of the year seven juniors elected French, reciting three times a week. In the same class were two juniors with whom it was a required study. The class read the Andromaque and Mithridate of Racine, and Molière's Bourgeois Gentilhomme, Les Femmes Savantes, and Le Misanthrope. At midyear the classical juniors changed their elective to German, and the philosophicals joined by three other philosophical juniors continued the study four times a week through the second half-year, and read Corneille's Cid, Hugo's Hernani, Voltaire's Zaire (three acts), and one hundred and four pages of Le Romantisme Francaise of Professor Crane.

An extra elective class, consisting of five seniors and one special, began Italian, reciting twice a week during the first half-year and then continued the study through the year with one hour a week. Sauer's Grammar was used as a help in acquiring the forms of the language which were at once put in practice in reading the Spagna of De Amicis. The class read in all some one hundred and fifty pages.

The sophomores (eleven) with seven engineers and one special, began French at mid-year, reciting six times a week. The futility of the attempt to combine these incongruous elements was soon apparent, and after a trial of seven weeks the engineers, with the exception of two who had previously studied French, were placed under Mr. Sargent who had instructed a similar class the year before. Thus relieved, the class made good progress. Its faithfulness is worthy of special mention. The per cent of absence under the rule which leaves it optional with the student whether he will attend any given exercise or not, was less than two and one-half. Five out of thirteen were not absent once out of nearly one hundred exercises. In respect to attendance upon work in the department in general it may be added that twelve out of some sixty students receiving instruction in the second half-year were present one hundred per cent of the time.

The department of English and Philosophy has few changes to note. Classes and subjects have been as follows:

Required work. 1. With seniors. Logic, second half-year. Return was made to Jevons' Manual as on the whole providing a better basis for the work to be done. Considerable additions were made in the way of practice and in the discussion of Induction. Philosophy. During the first six weeks, continuation of work of the preceding year, but without the use of textbook. The results are unsatisfactory, as it must be said this six weeks of time have been always. It is not set down in the catalogue and has not thus far been made to seem a part of the regular work of the department. The coming year, if the same time is still assigned, a textbook will be used to secure closer connection with junior work in Psychology. Composition. The section of time just referred to was made valuable in this direction, for it was in part used for talks on the subject of composition, and especially for extemporaneous exercises and for half the required themes of the year. The remainder of this requirement was taken up near the end of the year, chiefly in connection with graduation theses.

2. With juniors. Psychology, second half-year. Sully's treatise was read, except the part relating to the will, which remains to be discussed during the first six weeks of senior year. Composition. All the work of the year was done in the second half, while the class was regularly met for other work. At the same time, the hours

allowed for that work were only three a week, and none could be spared for composition. As has often been said in these reports, composition is at a great disadvantage when no programme hours are assigned for it. The magnitude of the evil increases every year. What ought to be treated in every way as an important subject, really finds no recognition in our distribution of hours. So long as this state of things continues, students will look upon composition as a gratuitous infliction and no part of what purports to be a well-considered course of study offered by the College. There should at least be an elective opportunity afforded during the last two years for the study of composition, and especially for ample practice under careful supervision. If during these years it cannot have place as a required study, then, while requiring some work of all on the present basis, allow such as desire to give it the time it deserves to make it a full elective study. One hour a day would not be too much time, and this devoted largely to writing would be equivalent to the two or three hours a week of "programme time" given to an elective study. While it would be desirable to offer such an elective opportunity throughout the last two years, much less than that time would make a good beginning with what it is believed would prove to be most profitable work to the student. Concerning the work of juniors in composition the past year, it may be said that much greater promptness and regularity than has been usual resulted from the recent regulations under which the making up of such omitted work is not allowed and credit is not given for work not done.

3. With sophomores. Rhetoric, first half-year· A new textbook by Professor Genung was used, or so much of it as was then published. This was supplemented by lectures in place of a second part of the same treatise promised but not received in season. Composition was required in connection with textbook study, one hour a week of the assigned time being given to this part. What appears in the catalogue as the year's requirement in themes was done during this half-year.

4. With engineers of the first class. Rhetoric and composition. It has been found desirable to make a separate class of the entering engineers because their course provides for only one half-year in these studies, while members of the other course have three years or half-years in composition, and the textbook work should on that account, if on no other, be somewhat different. Portions of the same textbook were used and more time was given to practical exercises.

Optional work with juniors. English literature, four hours a week, second half-year. Selections from Chaucer, Shakespeare, Spencer and Bacon were read, with talks on the development of literature during the period of these writers.

Elective work. 1. With seniors. English Literature, through the year, the study of authors, mostly in selections read by the class, continuation of the optional work of second half junior year to the time of Byron inclusive. More criticism by the class than in the optional class, and more in the second half-year than in the first. Also, English literature, through the year, with a more advanced class. During the first half-year the critical study of writers from 1825 to the present time, chiefly of the poets, and among these especially Robert Browning. During the second half-year, discussions based largely on Gummere's Poetics, followed by a somewhat extensive study of fiction, its characteristics, its development, and the specific criticism of a considerable number of representative works of novelists from Thackeray to Blackmore. A large amount of excellent work was done by this class. Several seniors were members of both classes through the year.

2. With juniors and philosophical sophomores. Analysis of Speeches, through the year. In the first half-year selections were from American oratory, political and forensic, and in connection with the former the history of American politics so far as illustrated by the speeches read, was brought into consideration. In the second half-year selections were from British oratory as represented in Goodrich's collection.

The department of Oratory for the last college year has included all the students of the sophomore and freshman classes of the college of letters, besides those from the department of engineering who may elect to attend its exercises. It has also included all the students of the divinity school.

In the junior and senior classes the study is elective. About the same proportion (nearly one-half the classes) as in past years have elected the study.

The brief time allowed the study of expression by the college curriculum is mainly given to strictly practical and primary work. In the two lower classes it consists mainly in vocal and gesture drills in the technique of the art, and in the analysis of language for the best forms of expression. In the two higher classes some attempt is made to broaden the field of instruction and to acquaint the student with that body of truth which fairly merits the title of the new philosophy of expression.

The senior and junior class-lessons were from Shakespeare's play, the Merchant of Venice. The sophomore and freshman class-lessons from Julius Cæsar.

Besides these regular class-lessons the students of all the classes gave declamations and readings each week in the large hall. As an evidence of the interest taken in these public exercises I would mention the fact that no student is either urged or required to appear on the platform at a Public, yet at the first call for volunteers the speaking lists for more than half the term were filled.

In this connection our last prize readings and recitals may be spoken of as demonstrating the truth that where both psychic aptitudes and the physical technique to express those aptitudes are properly trained in dramatic and æsthetic directions, our students can produce fine art studies before the most critically exacting audiences. It probably will be a full decade before such another really fine exhibition of dramatic work can be presented as was given by three of the contestants from the senior class.

The Professor expresses his earnest conviction that to write, read and speak good English should be made a requisite for graduation from every college of letters, and that no adequate knowledge of the science and art of expression, for high uses, can be obtained from the desultory and inefficient instruction that now burdens our American colleges.

In the department of Natural History the seniors, numbering twenty-four members, finished Geology at the end of the first half year, with four exercises per week. The juniors, consisting of eighteen members, began Botany the second half year with four lessons per week and finished May 31st. The sophomores began Botany the third day of April and recited three lessons a week until the close of the college year. Three hours of instruction a week were given to the philosophical students of the sophomore class, for half a term, to prepare them to enter upon natural history study. Five seniors elected Biology six hours a week the first half year working in the laboratory. The elective class in Mineralogy consisting of twelve members received instruction, six hours a week for the second half year in the mineralogical laboratory.

The President of the College met the seniors four times a week during the first half-year in Ethics and the same number of hours in Political Economy for the second half-year. Three seniors took the Law elective three hours a week for the first half-year, using Maine's Ancient Law as a text-book supplemented by lectures. In the second half-year four seniors elected International Law three hours a week.

The attention of the Trustees is called to the reports of the Divinity School, and the Barnum Museum of Natural History, which are submitted herewith.

ELMER H. CAPEN.

Tufts College, Sept. 22, 1887.

# THE DIVINITY SCHOOL.

# THE DIVINITY SCHOOL.

*To the President:*

In obedience to the regulations of the College, I beg leave respectfully to report the condition and work of this department for the academic year of 1886-7.

The number of students in attendance during the year was twenty-seven, distributed in the following manner, namely: In the senior class, five; in the middle class, ten; juniors, six; sub-juniors, four; and in special courses, three. At the end of the year four seniors, having accomplished the prescribed work and passed creditably their final examinations, were duly graduated and received the degree of Bachelor of Divinity. One member of the class, owing to a severe and protracted sickness, was unable to complete his work, but hopes to do so during the coming year. Of the whole class four were soon, if not already before graduation, under engagements for permanent ministerial service, while one remaining at the institution in prosecution of his studies supplies vacant pulpits in the neighborhood as opportunity offers.

The work of the School has been carried on essentially in its former manner, and I think with an increasing energy and success. Without neglecting the advantages attending a regular class-room drill, our method, perhaps, inclines more and more to less reliance upon mere textbooks and disposition to send the student to original sources of authority or information. He is required to form his own conclusions, subject, of course, to a review by the Professor and such discussion as the subject may naturally suggest. On all subjects to which this method is applicable, the results are very satisfactory. The student learns how to use books, how to prosecute study by himself, and gradually gains facility in this kind of work, while he acquires a wider field of vision and an increasing confidence in his own powers. An adequate knowledge of the various opinions entertained by others upon many subjects naturally tends to suppress self-conceit and create a modest diffidence.

It is of little use to load the memory of most persons with mere words. One needs to grasp principles and the reasons of things firmly, and then their application becomes relatively easy. We trust that our students in their respective fields of labor are generally giving proof of the good intellectual training they have here received. And while alluding to this subject allow me to express the gratification we all have reason to feel that, while our School is yet so young and beginning in so humble and unpretentious a way, and though it has labored under so many embarrassments and deficiencies, it has still in these four years of its existence furnished to the ministry between seventy and eighty of its members fairly well and a considerable portion very well educated, and who are now doing excellent service for the church.

I have to record the death of one of our students who, after a ministry of about ten years marked by faithfulness and success, passed away only a few months ago.

In concluding allow me to remark that our numbers the past year tested severely the extent of our accommodations. A room barely sixteen by twenty feet makes a limited chapel for thirty persons, and if our anticipations for the incoming class of the next year are realized they must subject us to a still closer contact. We need almost beyond the power of language to express a Divinity Hall with ampler accommodations for our increasing school, with a respectable working library and other apparatus suitable for the illustration of many subjects which fall within the vast province of theology and its cognate subjects. Is there not some individual in our extended constituency, or a number of individuals, who so appreciate the interests of religion, and see how nearly our School touches them, who will confer upon it the boon, and upon themselves the honor, I might almost say the immortality of earth, by building such a Hall and placing their names upon it?

Respectfully submitted,

THOMAS J. SAWYER,

*Dean.*

Tufts College, Sept. 22, 1887.

# THE BARNUM MUSEUM.

# THE BARNUM

# MUSEUM OF NATURAL HISTORY.

*To the President:*

The Director of the Barnum Museum has the honor to submit the following report:

The affairs of the Museum are in a prosperous condition. The collections have been enriched by private donations from former friends and others, who, having had free access to the Museum, have become interested in its prosperity. The collection of mammals has received the following valuable contributions through the continued kindness of the founder of the Museum.

1. The skin of the African lion, Kennedy, mounted in the best manner by Ward of Rochester.
2. The skeleton of this animal—in course of preparation and will be ready for exhibition about New Year's.
3. A mounted specimen of the Nilghau, (Portax pictus) one of the largest and most interesting of the antelopes of India.
4. A skeleton of the Guanaco (Auchenia llama).
5. The mounted skin of a remarkably fine African Porcupine.
6. The skeleton of the same.

Besides the foregoing, the mounted skin and skeleton of the rare two horned Rhinoceros (Atelodus bicornis) are expected to be ready for a place, in the Museum, during the coming year.

By such valuable gifts the founder of the Museum continues to show his love for natural science and his unflagging interest in the welfare of the College.

The Museum is also indebted to Mrs. Mary T. Goddard, for a collection of Alpine ferns comprising forty-five species, neatly mounted in book form. To Miss Matilda Goddard for a case of specimens of emery. To Mr. Edward Harrington of Boston for the skins of seventy-eight of our native birds and thirty-seven birds' nests containing the eggs of the builders. The specimens are in a fine state of preservation. To Mr. William S. Beekman of W. Medford foı a series of seventy-three species of fossil corals, comprising one hundred and fourteen specimens illustrating the Silurean and Devonian of the Falls of the Ohio. Also for valuable mineral and geological specimens in exchange for mineral and rock sections. To Mr. Henry Holden of Boston for minerals and a copy of the "Geological and Topographical Atlas accompanying the Report of the Geological and Topographical Survey of the Fortieth Parallel." To Prof. J. W. Kingsley for a collection of mounted insects, in addition to those previously donated and acknowledged. To Mrs. Gilman Waite of Medford for a suite of fine copper ores. To Mr. Winthrop Alexander of Roxbury for a collection of several hundred good shells and other curiosities. To Mr. Albert Metcalf for several thousand cards and labels for use in the Museum. Three fine specimens of chalcopyrite and "Capen's Birds' Eggs of Massachusetts" have been acquired by purchase. To Drs. Mark of the Agassiz Museum, C. O. Whitman, J. W. Kingsley, R. W. Shufeldt, Howard Ayers, J. W. Fewkes and William Patten, thanks are due for valuable papers embodying researches in the department of Zoology.

No loss or injury has occurred to any specimen belonging to the Museum during the past year. The mounted animals have escaped the attacks of insect pests and are apparently as perfect as when arrayed in the cases two years ago. All but a few of the unnamed fossils which had been accumulating for some years have been identified and labelled.

More than thirty years ago an appeal was made to the friends of the College to collect and send specimens of minerals, shells and curiosities of any kind to serve as a nucleus for a future museum. The call was generously responded to from all parts of the country. Some who could not send specimens gave money liberally to be expended in their purchase. A very respectable collection of minerals, fossils, shells, mounted birds, botanical specimens and Indian relics was obtained in the course of a few years, but its location was in a building peculiarly exposed to danger from fire. When the President of the College made this fact known to Mr. Barnum —who was formerly one of the Trustees and who had himself suffered immense loss of valuable collections by fire—he at once appreciated the situation and as a result gave a fine fire-proof building, and also an excellent collection of stuffed animals. His example should inspire every graduate and every other friend of the College to do something towards making the Barnum Museum more and more worthy of the name of its founder. He is untiring in his efforts to increase its treasures. We rely upon all our other friends to lend a helping hand. They or their acquaintances may have already in their possession, good minerals and fossils or these by a little effort may be procured in the neighborhood of their homes. Rare animals or plants are often found and suffered to escape or perish, when, if preserved, they would be of great benefit to science. Directions for preserving and forwarding, would be sent from the Museum to any person expressing a desire to assist in this direction.

It is perhaps unnecessary for me to call attention to the need of suitable assistance in the department of Natural History. There are lines of work, which can be pursued successfully by those only who have full command of their time and are not hampered by the duties of class instruction and general supervision. The appointment of a specialist to take charge of the biological department would be of great advantage to the Museum in many ways and give the Director the time needed for his special duties and the management of the other studies of a Natural History course. If this is not practicable at present, it is suggested as affording some relief, that the Natural History studies be made elective, beginning with the coming second half-year. Only those would be likely to be attracted to the study who would make the most of their opportunities and thus the burden of teaching would be essentially lightened. As Physiology is now well taught in all the schools fitting students for college, a knowledge of its elements might be among the requirements for admission to College.

JOHN P. MARSHALL.

TUFTS COLLEGE, September 22, 1887.

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# ANNUAL REPORT

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# PRESIDENT

OF

# TUFTS COLLEGE.

1887-88.

# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

## 1887-88.

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BOSTON:
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1888.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen:*

The President of the College has the honor to submit the following report for the academic year, 1887-88; namely, from September 22, 1887, to September 20, 1888.

The Corporation has been called to mourn the loss of one member by death. Wilmot Lillie Warren, a graduate of the class of 1868, died in December, 1887. His loss is a serious one to his associates. His devotion to his Alma Mater was strong and tender. As a journalist he enjoyed a wide and commanding outlook of the whole field of public education. He brought to the discharge of his duties as a trustee a mind well-informed and sagacious, and could always be relied upon to give his voice in favor of whatever promised to ensure the stability and promote the progress of the College.

Henry Bowen Metcalf has been elected to fill the vacancy caused by the death of Mr. Warren.

Paul Casper Freer, M. D., Ph. D., has been appointed instructor in Inorganic Chemistry.

Chase Palmer, Ph. D., and Hunter Pendleton, Ph. D., have been appointed assistants in Organic Chemistry.

In June last leave of absence for one year was granted to Professor Michael. During his absence Dr. Freer will give the usual class-room instruction and Dr. Pendleton will have charge of the laboratories.

The whole number of students admitted to the College in all departments is forty-eight. They are distributed as follows:

| | |
|---|---|
| Sophomores, . . | 1 |
| Freshmen, . . | 13 |
| First Engineers, . | 8 |
| Special Students, . | 6 |
| Divinity School, . | 14 |
| Graduates, . . | 6 |
| Total, . . . | 48 |

The whole number of degrees given in course at the last Commencement was thirty-four, as follows:

| | |
|---|---|
| Bachelor of Arts, . . | 14 |
| Bachelor of Mechanic Arts, | 8 |
| Bachelor of Divinity, . | 9 |
| Master of Arts, . | 3 |
| Total, . . . . . | 34 |

The whole number of students enrolled in the College is one hundred and forty or one less than was reported last year. They are distributed as follows:

| | |
|---|---|
| Undergraduates, . . | 92 |
| Divinity School, . . | 35 |
| Graduates, . . | 13 |
| Total, . . . . | 140 |

The increase of numbers during the last few years has put a severe strain upon the teaching force of the College. This is particularly the case in the Divinity School, where temporary provision will have to be made for instruction during the next year, and in some departments of the College of Letters, notably the departments of English and modern languages, where there is great need of a permanent instructor in English and French. Indeed there is room and a strong demand in each of the foregoing departments for an additional professorship, if only kind friends would provide the necessary funds.

Since the establishment of a course in electrical engineering there has been a steady increase in the number of students in engineering. Experience shows that it would be perfectly easy to build up here a large and flourishing technical school. To accomplish this, however, several things are necessary. The course of study should be increased from three years to four years. There is already a strong pressure for this. Provision should be made for instruction in both mechanical and mining engineering, and there should be enlarged opportunity for laboratory work. The professor of civil engineering and the assistant professor of physics show in their reports how, with comparatively slight expense, a course of mechanical engineering could be provided. Beyond this, however, we cannot go without additional room and teaching force. Yet there is a serious demand in this region for a technical school, furnishing the best quality of instruction at a moderate cost to men of limited means. The friends of scientific education could not render a greater service than to supplement what has already been so well begun here with an endowment sufficient to equip completely a scientific school.

As the result of a systematic effort now going forward to increase the candidates for the Christian ministry the resort to the Divinity School is greater than ever before. This is encouraging in many respects. The newly awakened interest in theological education is a hopeful sign. It is a source of great satisfaction to the faculty also that they are enabled by these conditions to exercise a closer scrutiny of the candidates and to demand and enforce a higher standard of attainment as a condition of entrance. But the number offering themselves for acceptance is not without serious embarrassment. Not only is there an increased demand upon the corps of instructors, but there is an imperative call for more room, both for class-room work and for lodgings. A theological building is fast coming to be a necessity.

The late W. H. Ryder, D. D., formerly one of the Trustees and an early and constant friend of the College, who died during the year, made provision by will, after the payment of certain specific legacies, that the College should have an equal share with four other institutions in the residue of his estate. The fund thus created is to be for the benefit of the Divinity School. The time for the settlement of the estate has not yet expired and it is impossible to tell how much the College will receive under the will. But if the amount should approximate what we have been led to suppose it might be, it seems reasonable to believe that it can be made the basis of a movement which will give specific funds for the Divinity School sufficient for its immediate needs and which will provide also the requisite buildings. When this is accomplished an important step will be taken towards the permanent financial relief of the College as well as for the more successful working of the Divinity School.

There are now in the gift of the College upwards of thirty scholarships by which the College charges are remitted to those who hold them. In addition to this it has been the policy of the College for many years, by means of gratuities, to relieve from the burdens of tuition worthy and promising students who were in needy circumstances. The question has often arisen whether it would not be better for the College to be made absolutely free to all. After patient study of this question for many years I am persuaded that the College ought to adopt this policy. In view of the great number of young men in straitened circumstances seeking education, in view of the constantly increasing expense of living, apart from the tuition, in view of the evident desire on the part of the founders of the College that its advantages should be furnished at the lowest possible cost, it is clear that we could not render a greater service to education nor perform an act which would bring us into closer sympathy with the people. But the College is not in a financial condition to do this at present. To make the step perfectly easy and safe we ought to have one hundred thousand dollars, or, at least, fifty thousand dollars of additional scholarship funds. Is there not some one who for so great a boon conferred upon humanity will give this amount? Or would not the proposal to do it, make such an appeal to the public that the money would be cheerfully contributed from many sources?

The College has received the gift of a large steam boiler from the Hon. Charles Whittier, and a complete set of pipe-cutting tools from the Walworth Manufacturing Company. Other friends have given valuable machinery for the physical laboratories and work-shops. There is still need of three or four thousand dollars worth of machinery to make the facilities of the shops complete.

Permit me to call attention to the work of the College in detail.

The sophomores read several satires of Horace, the second Philippic of Cicero, and the Germania and Agricola of Tacitus. They also had one exercise a week in Latin composition, for several weeks.

The freshmen read the twenty-first book of Livy, Cicero's Cato Major, and one book of the Odes of Horace. They had two exercises a week in Roman history and antiquities, using Liddell's History of Rome, Rawlinson's Manual of Ancient History, and Ramsay's Elementary Manual of Roman Anqutiities. They also had a few lectures on subjects connected with their studies, and had an exercise in Latin composition once a week through the year. Three seniors and four juniors elected Latin the first half-year, reading the Adelphi of Terence and the Menaechmi of Plautus. One senior and one junior read the first book of Cicero's Tusculans the second half-year.

The freshmen received instruction in Greek six times a week for the first half-year, and five times a week for the second half. The textbooks used were: Plato's Apology and Tyler's Iliad, books xxii. and xxiii., and the Philippics of Demosthenes. One hour a week was devoted to reading at sight in the authors used as textbooks. Instruction was also given to the class once a week in Greek prose composition. As usual no textbook was used, the exercises being made out with reference to the prose writers used in the class-room. The sophomores received instruction four times a week from the beginning of the college year to February 11. Textbooks: Lysias' Orations continued, and Euripides' Medea. Again a good deal of time was spent in analyzing the lyrical parts of the drama. One hour a week was devoted to writing Greek prose compositions. From the 13th of

February to the end of the college year two sophomores chose Greek as an elective three times a week, during which time they finished Euripides' Medea, and prepared some Greek prose compositions, besides reading at sight Xenophon's Symposium. One senior and one junior elected Greek three times a week throughout the year. Textbooks: Clouds of Aristophanes, one hour; Xenophon's Hellenica for sight reading, one hour; Greek prose composition, one hour. After the Clouds of Aristophanes, Pindar's Select Odes were taken as a textbook, with careful analysis of the metrical parts.

In the department of Mathematics there was little variation in the textbooks, methods of instruction and subjects taught from those of the previous year. The differential and integral calculus were taught by the Walker Professor to the second and third year engineers. One junior elected with second year engineers. The instruction was given by lectures and the use of Taylor's elements of the calculus. The sophomores during the first half-year finished spherical trigonometry and studied the elements of analytical geometry. Instructor Starrett taught one section of the class using Wentworth's analytical geometry, and the professor the other section using Briggs's Elementary Analytical Geometry. The division in charge of Mr. Starrett comprised those members of the class who had shown during their former work in Mathematics that they might appreciate the application of algebra to geometry.

The object sought in teaching the other section, was to present in a clear and simple manner the elements of co-ordinate geometry. The freshmen were taught algebra, solid geometry and trigonometry through spherical right triangles. The only conditions of failure in examinations were imposed on six freshmen who failed to attain fifty per cent. in examination on algebra.

The work of the Walker Special Instructor was as follows. Analytical geometry four hours a week; descriptive geometry, three hours a week; field-work and drawing, six hours a week. The class in analytics consisted of one division of the sophomores with the second engineers. Plain analytic geometry was taught. One senior elected descriptive geometry with the first engineers. The work during the second half-year consisted of trigonometry, four hours; descriptive geometry three hours; field-work and drawing, eight hours a week. The class in trigonometry consisted of one division of the freshmen and first engineers. The work in descriptive geometry was a continuation of the preceding half-year's work. Four electrical engineers elected drawing with the regular class.

The Professor of Engineering had work in applied engineering with the third class extending through the year. Railroad engineering was studied by the same class in the first term only. About the same amount of work has been done as in previous years. Each member of the class is called upon to recite on every subject taken up in the class-room; which can be done only with small classes. In the second half-year in addition to the above, the second class in steam did considerable work outside the textbook in the practical design of engines and boilers. Instruction was given to the first class in land surveying for the second half-year. Work in carpentry has necessarily been confined to the simple operations with bench tools, no attempt having been made to do anything in pattern making. The class in metal work has availed itself of the generous offer of the Hon. Charles Whittier and received instruction in his extensive shops in Boston. It is hoped, however, that an engine lathe, a planer, a shaping machine and milling machine will be provided at the college, there being too great a loss of time to the students in going from the College to the Roxbury District where the shops of Mr. Whittier are situated. If the man in charge of the boilers were a machinist, a portion of his time could be spent with the students in the machine and forge shops, and he would be competent to make repairs of pipes, pumps, and other machinery, and for some time to come his spare time could be employed in making machines and apparatus. With the increased facilities suggested above it would not be difficult to offer a course of mechanical engineering to students, if thought advisable

The work done by the Professor of Physics was as follows. The programme for the juniors and engineers was followed, namely; four hours a week for the first half-year, and three hours a week for the second half. There were twenty-four members in the class. The only change from the ordinary method was that the subject of electricity was treated by a course of twenty-seven lectures, as fully illustrated as the resources of the department would permit. A number of persons not members of the class attended regularly the whole course. The reason for the change was that the professor felt he would give the subject a simple and more systematic handling thus than it receives in any textbook he is acquainted with. The professor in addition to the above work had throughout the year a senior elective class of eight members, taking the subjects of the conservation of energy and the first principles of Mr. Spencer. The attendance upon this class was greater than that represented by the report figures, as a number of persons received permission to attend who were nearly always present, but of whose presence no record was kept. There have been added to the department the following pieces of apparatus. A dividing engine, a chronograph,—both made in Genoa,—a ten arc dynamo and a sixteen lamp incandescent dynamo. The last two the gifts of friends. The shafts, pulleys, butts, etc. needed for the operation of these, were also the gifts of friends. There is still lack of bathroom and apparatus, chiefly for laboratory purposes. How much we need a building adapted for physical work can hardly be appreciated by one not called upon to devise ways, means and methods as substitutes for better facilities.

Under the assistant Professor of Physics the following work was accomplished. The class in mechanics, consisting of thirteen sophomores and twelve engineers, read as usual the first two hundred pages of Daniells' Physics, and solved numerous problems exemplifying the principles therein presented. Five second year electrical engineers worked six hours a week in the laboratory, following in general Glazebrook and Shaw's treatise on practical physics. Twelve other students elected laboratory work, two for the year, the others for a half year each. The facilities for instruction in electrical engineering have been greatly increased by the fitting up of a machinery room, forty-two feet by twenty-two feet, in the basement of the college building. It already contains a twenty-five horse power high speed engine with counter shafting and several good dynamos well mounted on substantial hard pine timbers. Now that we have a place to put them and the power to drive them, the demand for machine tools becomes imperative. Hitherto every class in electrical engineering has constructed among other things some form of a dynamo; but in order that this might be accomplished, it has been necessary for the instructor himself to do at his own expense all metal work requiring anything more than a foot lathe in a Boston machine shop. Now, as a rule, students undertake such work with enthusiasm, and voluntarily work outside of required time; so that with the proper appliances we certainly could construct much valuable apparatus at a merely nominal cost; and what is of even more importance engineering students would become practically acquainted with the construction of electrical machinery. We need one or two lathes, a planer, shaper, milling machine, and upright drill. The estimated cost of these tools with all attachments and accessories is about twenty-five hundred dollars. It is to be hoped that friends of the college may be found to speedily supply this need. The number of students who elect laboratory work is constantly increasing. At present there are twenty such aggregating over two hundred hours a week. The demand for additional and especially duplicate apparatus for the laboratory is very urgent, and an immediate appropriation should be made to meet it.

In the department of Chemistry the number of students in the class in general chemistry for the first half year was twenty-four. The number electing chemical laboratory work was fourteen, of whom two were seniors studying qualitative analysis. The remainder were juniors engaged in general chemistry. An elective class in organic chemistry was instituted during the second half year with six students. The laboratory had eight students at work in it, three of whom, juniors, were taking a new course in organic preparation. The number of chemists, exclusive of the professor, instructor and assistant in chemistry, engaged in research work was two. During the second half year a private pupil was taken into the private laboratory. The researches published during the year were:

I. Concerning the action of sodium malonicether toward resorcinol.

II. Upon the constitution of sodium acetoaceticether.

III. Criticism on the publication of J. Wislicenus. "The grouping in space of the atomic organic molecules." By Arthur Michael.

IV. Concerning alloisomerism in the crotonic series by Arthur Michael and Hunter Pendleton.

V. The condensation of sodium acetoaceticether with cinnammic ether by Arthur Michael and P. C. Freer. The latter in manuscript is yet unpublished.

The following work was done in Natural History. In the first half-year a class in geology composed of fifteen members of the senior class, read Le Conte's Elements of Geology, with four recitations of one hour each, a week. Occasional lectures were given, as usual. A class of six seniors elected biology and took the usual practical course, two lessons of three hours each, a week. In the second half-year a class of nine seniors took a course in elective mineralogy of two lessons, of three hours in length, each week. A class of civil engineers, composed of six, took a separate course, with one lesson a week of three hours in length. A class in physiology, read Martin's Human Body with three recitations a week. A class of four sophomores read Gray's New Lessons in Botany, and made constant use of the microscope in the study of plant structure. They had three lessons of two hours each, every week.

The Professor of Modern Languages reports that in general the classes have been constituted like those of the preceding years, and have accomplished a similar amount and kind of work. Instruction has been given by the professor to five classes in each half-year, with an aggregate of seventeen hours a week in the first half-year and nineteen in the second half-year. Six hours a week were also given by a special instructor to an additional class. To meet the normal development of the department, and to serve the best interest of the students, it would require an increase upon this programme of about fifty per cent.

The class beginning German at the opening of the year consisted of thirteen juniors, one sophomore two special and one theological student, reciting six times a week. The Jaynes-Meissner grammar was used as a textbook, the first part being completed, and the second part begun. Bernhardt's Novelletten was used as a text for translation, fifty-five pages being translated in the class-room. From this class nine juniors and a theological student elected the study in the second half-year, three times a week. Two of three hours, — the regular requirement, — were devoted to translation, and the class read Lessing's Minna von Barnhelm, and the first four cantos of Hermann und Dorothea. A third hour was given to composition, the second and third parts of the Jaynes-

Meissner grammar being used. The second class in German consisted of five philosophical students besides two students from the Divinity School who elected the study in the first half-year. The work of the class—three hours for the first half-year, and four for the second half-year,—was translation of historical prose, with the addition of romantic poetry in the last half-year. David Muller's Geschichte des deutschen Volkes, and Wieland's Oberon were the texts read in the former, some one hundred and fifty pages, covering the period from the outbreak of the French Revolution to the close of the Franco-Prussian war, while all of Oberon was read except the sixth canto and an occasional short passage. The advanced class in German consisting of two philosophical students, read, three times a week, Vilmar's Geschichte der Deutschen Literatur, covering particularly the mediæval period and the leading authors of the second classical period.

Two classes in French were formed, one at the beginning of the college year, the other — in two divisions — at mid-year. The former composed of two philosophical freshmen, one junior (elective) and one special student. In the first half-year three times a week, the class had historical prose — "Tableaux de la Révolution Française and one play, — Racine's Iphigénie; the second half-year, four hours a week was especially devoted to the classic dramas, seven plays being read as follows: Of Corneille, Horace, and Polyeucte; of Racine, Athalie, and Brittanicus; of Molière, L'Avare, Le Bourgeois Gentilhomme, and Le Misanthrope. One hour a week in the second half-year was given to composition, Chardenal's second course being used as a text-book. Thirteen sophomores, together with six engineers who by reason of previous attainments could be classified with them, began the study of French at mid-year, reciting six times a week. The first part of Whitney's grammar was completed, and the class read Rougemont's France, a work treating of the institutions of modern France, and a comedy of Meilhae, La Duchesse Martin. A small division of the engineers, consisting of students who had never studied any language, was instructed by Mr. Charles L. Reed, whose special attainments in the department has eminently well fitted him for the work. In addition to the classes above specified one student met the professor twice a week during the first half-year for advanced work in composition, translations being made from French into German and from German into French.

The department of Oratory for the past year has included all students of the sophomore and freshman classes of the College of Letters, together with those from the department of engineering who had elected the study. It also included all students of the senior and junior classes of the College of Letters, and all students of the Divinity School who made oratory an elective. The plan adopted some years since of making the study of expression obligatory in the two lower classes, and elective in the junior and senior classes, has proved a wise one. The time in the sophomore and freshman classes is mainly given to drill work in the technique of voice and gesture, and in exercises in the analysis of language with a view to the best forms of expression in reading and speaking. This elementary work applied to forty or fifty young men of these two classes becomes a sifting process and results in the choice of oratory, as an elective, by those students who show more or less decided aptitude for the study of expression. The senior and junior class lessons were from Shakespeare's Henry the Fifth. The sophomore and freshman class lessons were from Longfellow's Courtship of Miles Standish. Besides the regular class work students from all the classes gave declamations, recitals, and readings once each week in the large hall. Only a want of time, not a want of inclination, interest or ability on the part of one student, stands in the way of higher individual attainment in the art of public speaking.

The training is still elementary and technical. With more time given to the work, students would be encouraged to prepare and present from the platform original theses, discussions and orations. The continued interest taken in our prize reading and speaking is shown by the large audiences that year by year greet the contestants. When we consider the small number compared with the larger colleges, from which we must draw our material for these contests, it is a matter of justifiable pride that our students can and do spreent work fully up to the level of that of the largest of our colleges.

The following is a summary of the work done in the department of English and Philosophy, together with a statement of some changes that are to go into effect the coming year.

Rhetoric and Composition. The first half-year Genung's Rhetoric was read by a class made up of regular sophomores and philosophical freshmen. Another class consisting of engineers, just entered, used a portion of the same treatise. These classes were met four times a week each; three times for textbook work and once for composition, which as now required includes both themes and extemporaneous exercises. Similar but more advanced work in composition was done with juniors the second half-year, in connection with psychology; also with seniors, in connection partly with psychology during the first six weeks of the year, and partly with logic the last half-year. For all classes the former requirement of six themes a year has been reduced to four and additional exercises in extemporaneous composition have been given. For these exercises and for themes subjects are usually assigned, a short list from which the student has the privilege of selection. The requirement of extemporaneous composition is not entirely new, but has been considerably increased during the year, with such results that this practice will be further extended. As an application of the principles of rhetoric relating to oratory, analysis of speeches has been taken by a small elective class meeting two hours a week during the first half-year.

Logic. Jevons' Lessons supplemented by lectures and practical exercises, was used by seniors meeting four hours a week the second half-year. One of the four hours was appropriated to composition.

English Literature. This work is wholly elective, and through changes of the curriculum within the past year may now be taken by sophomores at mid-year, and is open to the end of the course. It was taken by seniors through the year, continuing the work they had done as juniors, the study of certain authors to mid-year, then more specifically the principles of criticism; also by a large class composed of juniors and sophomores the second half-year, reading chiefly Chaucer and Shakespeare.

Psychology. Seniors in six weeks taken from the programme of ethics at the beginning of the year completed the reading of Sully, begun the year before. Juniors in their second half-year read the same work as far as the subject of the will.

Reference has been made to certain changes in the work of the department, to go into effect the ensuing year. These changes have been made with a view to enlarging the course in composition and making related work more nearly continuous. Extemporaneous composition is now to be required, one-half of freshman year, and an elective in composition has been offered in junior year, which provides for six hours a week of work in the class-room. This is intended to carry forward, by a half-year of solid work, the compositions begun by freshmen and continued by sophomores in connection with rhetoric. It is intended to meet, as far as is possible, with an inadequate teaching force, the rapidly increasing demand for more and better instruction in English in the colleges. It is in support of the same attempt that the study of English literature has now been made elective, from an earlier point in the course, namely, from the middle of sophomore year. In making this desirable change great difficulty is encountered by reason of the lack of teaching force. The departments of English and modern languages are involved together in this difficulty. Freshmen entering with Greek have six hours a week (five, second half-year) in that language; those entering with French or German have but three hours, because it is necessary to class them with upper-class men pursuing those languages as elective. Since these freshmen cannot have their proper time in the French or German which they substitute for Greek, their required hours are made up by putting them with sophomores in rhetoric, not because this study is intimately related to their modern language study, but simply because it has seemed most available among the few studies they are supposed to be qualified to pursue. At the same time it works great injury to the department of rhetoric by separating these men from those with whom they properly class, thus compelling them to do all their work in rhetoric and composition, both required and elective, out of its place in the order regularly assigned. Under the changes described as going into effect the coming year, they will be shut out from the composition required of freshmen, and will lose most of the benefit which it is hoped to derive from those changes. The Professor has hitherto refrained from urging the matter of additional teaching force upon the trustees, according to his conviction of its importance, knowing that they labored under great financial constraint, while not less anxious than he could be to see the facility of the college improved. He, however, ventures one suggestion as to a method of some relief, slight, to be sure, and temporary, but far better than nothing, and at very moderate cost. Already something has been paid for an assistant to teach elementary French to entering engineers in the second half-year. An instructorship in English and modern languages, corresponding to the Walker Special Instructor, could doubtless be filled from among recent graduates of the college as to meet the difficulties that have been pointed out where the two departments come into relation. Until additional professorships can be provided for, this comparatively inexpensive experiment seems to him eminently worth trying.

The President of the College gave instruction to the seniors four hours a week for the first half-year in ethics, and four hours a week for the second half-year in political economy. He also had an elective class in law, made up of members of the senior class three hours a week for the year.

A course of eight lectures on the governmental systems of Europe was given to the entire college by George M. Towle, during the first half-year.

The college is indebted to the following persons for courses of lectures delivered to the Divinity School: The Rev. A. A. Miner, D. D., the Rev. G. T. Flanders, D. D., the Rev. H. I. Cushman, D. D., and the Rev. C. H. Eaton, D. D.

Attenion is called to the report of the Dean of the Divinity School and also the report of the Director of the Barnum Museum of Natural History which are submitted herewith.

ELMER H. CAPEN,

*President.*

Tufts College, Sept. 20, 1888.

# THE DIVINITY SCHOOL.

# THE DIVINITY SCHOOL.

*To the President:*

In obedience to the stated requirements of the College, I beg leave respectfully to report the condition and work of the theological department for the academic year of 1887–8.

The whole number of students in the school during the year was thirty-five; the largest number ever registered in the history of the department. Of these ten were seniors; four, middle men; six, juniors, and ten sub-juniors; while five were pursuing special courses of study, or special studies. Two facts are gratifying and deserve notice here. The first is the large increase in the number of students during the nineteen years of the existence of the school, from three to thirty-five; and the second is the gradual average improvement in the students' preparation for the work of the school, both indicating clearly the progress the denomination is making in its appreciation of an educated ministry.

You will observe that our classes and curriculum of study are arranged on the plan of a three years' course of study instead of four as formerly; in other words, on the assumption that the majority of our students are college graduates, to whose status and interests our work is adapted. It is true that we have not as yet reached that desired level, but it was deemed best to make that the standard, and work towards it as fast and as far as circumstances would allow. Our examinations of candidates for admission to the school are being made more and more exacting, and though for a time it necessitates the exclusion of some who would gladly enter, but are not prepared to take up advantageously even the work of those who are pursuing studies merely preparatory, it is believed that the results will demonstrate the wisdom of the course, and that the great body of our constituency will heartily approve it.

The faculty is feeling more and more how desirable it is in every way,— desirable alike for the best interests of the school, for the greatest advantage of the student and his future success, and for the good of the church into whose ministry he is to enter, that he should, if possible, come to the school with the training and discipline which it is the prime object of American colleges to give. The church needs to-day a well-educated ministry. Ours needs especially sound scholarship. It must not assume that the battle is fought and won. Before the young men who are to-day entering the ministry, or preparing to enter it, there will arise many occasions when accurate and extensive scholarship would not only be of signal service, but may be imperatively demanded in the advocacy and defense of the truths we hold so dear and the world needs so much. Some of the errors with which the church is already threatened, may I not say afflicted, are the fruit of imperfect education, a contempt of thorough scholarship, and shallow thinking.

The work of the school the past year has been satisfactory, the students have exhibited an exemplary industry and zeal; while the faculty have brought to their work a larger experience and wider views. Improvements in the methods of teaching, experience teaches them to make while our increasing means and facilities open year by year new and better paths for the student's progress. Wherever it is practicable he is helped to help himself, which in education, as in character, is the best aid it is possible to render. The student must learn to be self-reliant and seek the best sources, that is the original sources of information, and form his judgments with modesty under the best lights of the time. Though our school was opened only nineteen years ago, and then under very humble circumstances and in the most unpretentious manner, it has already furnished the church with eighty or ninety moderately educated ministers, some of whom occupy with honor some of the best pulpits and most responsible positions in the denomination.

I owe it to the Rev. Doctors Miner, Flanders and Eaton, to acknowledge their kindness in giving the school, each a course of very interesting and useful lectures.

It is due to the students of the year also to state that by their enterprise and generosity, aided by their friends, they enlarged materially and fitted up neatly, the room we have occupied as a chapel. The added room was greatly needed to meet the wants of our growing school, and it has been made to wear the aspect of a place for social worship.

The bequest of the late Dr. Ryder to our institutions of learning, and especially to our theological schools, has excited hopes in our own school which, perhaps, may not be fully realized, but which may, if properly used, be the means of greatly promoting its material interests. What this school specially needs is first a divinity hall, designed and built to accommodate fifty or seventy-five students. Beyond this we should have a fund belonging to the school, sufficient property to maintain it, and so render it financially independent of the College funds.

Respectfully submitted,

THOMAS J. SAWYER,

*Dean.*

# THE BARNUM MUSEUM.

# THE BARNUM

# MUSEUM OF NATURAL HISTORY.

*To the President:*

During the past year, courses of instruction have been given, in the Museum, in Geology, Crystallography, Blowpipe Analysis, Botany and Biology.

The following contributions, not previously acknowledged, have been received through kindness of the Hon. P. T. Barnum.

The mounted skins of a giraffe (camelopardalis giraffa); an oryx (oryx beisa); a fallow deer (cervus dama); a gazelle (gazella dama); a cassowary (casuarius galeatus); a baby camel (camelus arabicus); a paca (cholocœmys paca); a collared peccary (dicotyles torquatus); a black bear (ursus americanus); a hartebeest (acalephas caama); a two-horned rhinoceros (atelodus bicornis); a black leopard (felis pardus); a bibos indicus; a chlorocebus cynosurus, and four species of cynocephalus.

The skeletons of the African lion Kennedy; of an oryx (oryx leucorix); of a kangaroo (macropus rufus) and of a monkey (chlorocebus cynosurus).

By an arrangement made with the guardians of the U. S. National Museum, Mr. Barnum has also secured very considerable additions to the mineralogical, botanical and archæological collections of the Museum.

Three fine casts of meteorites, two hundred and seven good specimens of minerals, one hundred and twelve Indian stone implements and about a thousand unmounted dried plants have been forwarded since the first of July, to the Barnum Museum by favor of Professor Goode, assistant secretary of the Smithsonian Institute.

Acknowledgment is due to the Hon. Chas. Whittier for a fine specimen of auriferous quartz from Colorado; to Mr. W. S. Beekman for several good minerals, among which was a large specimen containing crystals of Sillimanite; to Rev. J. S. Gledhill for a remarkably fine specimen of the sponge, (chalinula oculata) from the coast of Maine; to E. J. Young, D. D., for good mounted specimens of the raccoon (procyon lotor), and of the Texas rattlesnake; to Mr. William York for a finely polished slab of stalagmite (Mexican onyx); to Mr. Thomas J. Sawyer, Jr., for valuable pre-historic Indian relics and fossil teeth of saurians; to Mr. Sumner Robinson for minerals, and to Mr. Frank W. Durkee for a good collection of our native birds' eggs. Thanks are due to Prof. J. W. Kingsley, Drs. J. W. Fewkes, William Patten and Howard Ayres, for valuable papers.

Your attention is invited to the need of additional case room for minerals, shells and other specimens which are now stored in drawers and on shelves in the store-room, and if the income from the Museum Fund should be found to justify the outlay, it is recommended that a portion of the remaining available space in the exhibition room be filled with suitable cases.

The numerous specimens are all in excellent condition, and no loss has occurred to them during the past year.

The number of visitors has been more than double that of any previous year. Respectfully submitted,

JOHN P. MARSHALL,

*Director*.

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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

1888-89.

# ANNUAL REPORT

OF THE

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# TUFTS COLLEGE.

1888-89.

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BOSTON:
PRINTED BY WALLACE SPOONER,
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1889.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen :*

The President of the College has the honor to submit the following report for the academic year, 1888-89; namely, from September 20, 1888, to September 19, 1889.

The Corporation has lost from its membership by death, Zebulon L. White, who was one of the earliest of the graduates of the College to be elected a trustee, and who, while health permitted, rendered a most intelligent and valuable service. Few men had a better appreciation of the needs of a college than he, or of the means by which those needs may be secured. To a mind enriched by travel and by a close observation of the instrumentalities of our American civilization, he added an affection for his Alma Mater which nothing could overcome. Hence he was ever ready to make any sacrifice to promote the interests, which, as a trustee, had been placed in his hands. The death of Mr. White, the resignation of Mr. John B. Winslow, together with the resignation by reason of removal to New York of the Rev. Edwin C. Bolles, D. D., leaves three vacancies upon the Board.

During the absence of Professor Michael, lectures and instruction in Chemistry were given by Paul Casper Freer, Ph. D., and the laboratories were in charge of Hunter Pendleton, Ph. D.

Dr. Freer has received an appointment as Professor of Chemistry in Michigan University, and Dr. Pendleton has a like position in Bethany College.

Professor Michael tenders his resignation to accept an appointment in Clark University. The department of Chemistry is thus left entirely vacant. It is proposed, however, at the annual meeting, to nominate for the Professorship of Chemistry Arthur M. Comey, Ph. D., and to appoint F. W. Durkee, A. M., assistant in the laboratories.

John Stevens Lamson, A. M. B., has been appointed Walker Special Instructor, in the place of Milton G. Starrett, A. M. B., whose term of office expired by limitation.

The whole number of students admitted to the College in all departments is fifty-four. They are distributed as follows:

| | |
|---|---|
| Seniors | 2 |
| Freshmen | 18 |
| First Engineers | 10 |
| Special Students | 8 |
| Divinity " | 10 |
| Graduates | 6 |
| Total | 54 |

The whole number of degrees given in course at the last Commencement was twenty-eight, as follows:

| | |
|---|---|
| Bachelor of Arts . . | 11 |
| Bachelor of Philosophy . | 6 |
| Bachelor of Mechanic Arts, | 4 |
| Bachelor of Divinity . . | 2 |
| Master of Arts . . . | 5 |
| Total . . . . . | 28 |

The whole number of students enrolled in the College is one hundred and forty-two, two more than last year. They are distributed as follows:

| | |
|---|---|
| Undergraduates . . | 95 |
| Divinity School . . | 33 |
| Graduates . . . | 14 |
| Total . . . . | 142 |

It will be seen by the foregoing statement that in respect of patronage the condition of the College was never better or more encouraging than at present. All the dormitories are full and men are seeking accommodations outside of the quarters provided by the College. It would be an easy matter to increase this patronage in almost every department, if the present facilities of the College would warrant us in so doing. In the department of Engineering alone we shall have within the next three years, unless some measures are taken to arrest the movement of men toward us, from fifty to seventy-five students. The character of our teachers, the excellence of the work done, the proved fitness of those who have received their training here, together with the recent developments in the applications of the various forms of engineering and electrical science, are tending to bring the opportunities we offer into constantly greater prominence.

The Divinity School also has entirely outgrown its present quarters. Neither students nor teachers can be properly accommodated, while the increase in the membership of the School renders the teaching force inadequate to the work they are expected to perform.

The College of Letters also needs strengthening in several particulars. I called attention in my last annual report to the fact that the two departments of English and Modern Languages have reached a point where a division of their work is almost imperative. The two subjects of French and German ought each to be assigned to a separate teacher, and the burden then would not be light for either. It has long been known that the Professor who has charge of English is over-burdened, and that the best interests of the College would be served by providing a competent assistant for that work. In addition to these needs it is scarcely necessary to remind the Trustees that there has been for a good while an emphatic call for a department of History. At present instruction in history is given by individual teachers in connection with their several specialties. But this is quite unlike having a master in the subject who can survey the entire field and give systematic instruction in the different branches of history. In recognition of this necessity, the Trustees have assured me that if I can obtain pledges to the amount of two thousand dollars a year for five years, they will establish such a chair. Of this amount I have already secured pledges for thirteen hundred dollars a year for five years. I hope to find leisure soon to secure the balance.

The needs of the College may be summarized as follows:

I. In the College of Letters funds for the founding of at least two more professorships. In this connection I ought also to specify the call for additional scholarships to furnish free tuition to worthy and promising men who have not the pecuniary ability to meet all the expenses of a liberal education.

II. An endowment of the Engineering Department, so as to provide for an additional professor with two assistants, and to give us a building with laboratories and workshops sufficient to meet the wants of fifty to one hundred students. With such an equipment we should have a scientific school that would not be inferior in the quality of its work to any similar school on this continent.

III. As has been repeatedly urged in these reports, the Divinity School should have a specific endowment of one hundred thousand dollars, and a building for library and recitation purposes. The School has now been established twenty years. It has furnished training for about eighty clergymen, the most of whom are alive and engaged in active service, many of them occupying pulpits which are among the foremost in America. But apart from the Packard Professorship and the prospective bequest from the estate of the late William H. Ryder, D.D., the School is without specific provision. The work which the School has done and the relation it bears to an important branch of Christian culture, entitles it to the generous consideration of its friends. Recently a movement has been instituted by the undergraduates to raise through the co-operation of the Alumni of the School one hundred thousand dollars. It is to be hoped that they will be encouraged to carry their movement to a successful issue.

The amount to be received from the Ryder bequest is probably about twenty-five thousand dollars. If one hundred thousand dollars could be added to that we should be enabled to maintain the teachers we now have in the School and add certainly one more, thus meeting a very pressing need.

Recognizing the desire for funds as above indicated, the Trustees have recently engaged the Rev. A. J. Patterson, D. D., to act as the financial agent of the College, under the direction of the President and Treasurer.

The wide acquaintance which Dr. Patterson enjoys, the high esteem in which he is held, make him peculiarly adapted for this work. He has already met with gratifying encouragement, and it is believed he will be successful in what he has undertaken.

Early in the year, Mrs. Caroline A. Ryder, widow of the late William H. Ryder, D. D., indicated to the President of the College and one other member of the Board of Trustees, her desire to make a gift to the College of the valuable private library of her husband. The tender was gratefully accepted by the corporation, the books and the cases in which they stood were transferred to the College and have been placed in a room, specially fitted up for the purpose, which will henceforth be known as the Ryder Library. The collection is an important and valuable addition to the books which were already in the possession of the College. The whole number of bound volumes indicated by the Library Catalogue, now exceeds twenty-five thousand, and if we include the books of the Historical Society, now deposited with the College, twenty-eight thousand volumes.

Two years ago I called attention in my report to the importance of broadening the college course so as to confer the benefits of a liberal education upon young men who have not had a preparation identical with those who come from the classical courses in the secondary schools. Many a bright youth on his graduation from the high school or academy finds to his sorrow that he has made a mistake in not aiming distinctly at the college, and if the door were only open to him he would gladly avail himself of more extended opportunities of study. For various reasons he does not feel that he can turn back and retrace his steps. But most gladly would he go forward if he could. It would seem that in our system of education, so closely related to the life of the people and so important to their highest welfare, the colleges ought to make a much broader provision than they now do. This could be accomplished without detracting anything from the quality of their work or lowering the standard of scholarship. For thirteen years, we have had in the College of Letters a course of study which omits Greek and substitutes therefor the modern languages, for which the degree of B.Ph. has been given. Some of our most scholarly men, during this period, have graduated in this course. But since the amount of requisition for admission in the modern languages is not the equivalent of what is demanded in Greek, the Faculty has determined, after mature deliberation, to raise the requirement in those studies to an amount which will at least consume as much time in the preparation as is now given in the secondary schools to Greek, and to ask the Trustees to permit them to offer the degree of A. B. for this course as well as for the older course with which that degree is now associated. Should the Trustees grant this request, as I trust they will, it will be the beginning, I firmly believe, of a movement that will put the possibilities of college training within the reach of a much more numerous class of young men than are now able to obtain it. In no way can a more valuable service be rendered alike to the cause of the higher education and the welfare of ambitious young men, who, in the years of their earlier education, may have lacked the friendly guidance of a wise experience.

I desire to call attention to the detailed statement of work in the several departments of instruction :

During the past year the sophomores read the satires of Horace, Cicero's first book of Tusculans, the Agricola of Tacitus, and the Adelphi of Terence. The freshmen read the first book of Livy, the Cato Major, and one book of the Odes of Horace. They also recited twice a week in Roman History, using as textbooks Liddell, Rawlinson and Ramsay. They also recited once a week through the year in Latin composition.

The freshmen received instruction in Greek six times a week for the first half-year, and five times a week for the second half-year. The textbooks used were, Xenophon's Memorabilia and Tyler's Iliad, books xxiii and xxiv; Thucydides : book v., fifteen chapters. These textbooks furnished also the material for sight-reading. Instruction was also given to the class once a week in Greek prose composition. As usual, no textbook was used, the exercises being made up with reference to the prose writers used in the class-room. The sophomores recited four times a week for a half-year. Textbooks : Demosthenes' Philippics (continued) ; Æschylus's Seven against Thebes. Again a good deal of time was spent in analyzing the lyrical parts of the drama. One hour a week was devoted to translating English into Greek.

The work in the Mathematical Department

during the last year, differed but little from that of several years immediately preceding. There are one or two matters of College history during the year concerning which a brief statement is made and a suggestion offered. The Faculty withheld the degree of A. M. B. from one who had finished the course of three years study. As this degree carries with it a guarantee that the holder is proficient in certain technical studies, and has acquired such a knowledge of the fundamental principles involved and so much mathematical knowledge, that he will be intelligent in all matters of civil engineering or of electrical engineering, to give such endorsement to one who shows himself on examination to be deficient in the necessary mathematics, and to have a very uncertain knowledge of the purely technical work of his course, must vitiate the confidence in our engineering department, which, our graduates have won among engineers.

The freshmen did not do so good work as previous classes, and it was not possible to carry them so far in their course. This is due in the main to an insufficient preparation in Algebra. The average per cent. attained in Algebra by the candidates at the entrance examination was only thirty-eight; while the average attained by the incoming class is far short of what we ought to expect. Still a gain that is somewhat encouraging is shown by an advance to forty-six per cent. This study should be excluded from the preliminary examinations, and special attention should be given to it in the last year of the preparatory studies.

Effort has been made for some years to attain good results by having analytic geometry and the calculus commenced simultaneously in the engineering classes. Although expectations were fully realized with students who were well prepared and had marked ability for mathematical studies, a disappointment has been with the results of the last two years, and it has been decided to finish the analytic geometry in the first half of the second year of the engineering course, and commence the calculus with the second half-year. This change will also afford students in the college course an opportunity to elect the calculus on the completion of the required mathematics, which will be much better than to begin it after having ceased the study of pure mathematics for a term of more than six months, as the old arrangement of studies necessitated. There is much need of an addition to the mathematical books in the Library. The instructors and students should have access to new mathematical works and periodicals.

During the first half-year the work of the Walker Special Instructor was distributed as follows: With one division of the sophomores and second engineers, analytic geometry, four hours a week. With the first engineers, descriptive geometry, three hours a week. With the first, second and third engineers, drawing, six hours a week. During the last half-year the Instructor had the first engineers in descriptive geometry, three hours a week; and all the engineers in drawing, eight hours a week.

In the Department of Engineering instruction has been given to the third year men in applied mechanics, theory and practice of railroad engineering, bridge designing, sanitary engineering and engineering materials. In the study of the materials, the cement testing machine has been in frequent use in determining the strength under various circumstances of the cements found in the market; and other machines are needed for making experiments in the other building materials. A fair proportion of laboratory work of this kind serves to increase interest on the part of students, and is a relief from harder intellectual work. The second class was instructed in steam, using Jamieson for a textbook, accompanied by notes and lectures on modern engines. Drawings of the new United States Cruiser Maine, have been carefully revised, they furnishing a fine example of the triple expansion marine engine.

The course in practical work has been closely connected with and made to supplement the course given in steam. A few lessons were given in forging, welding and tempering, in the blacksmith's shop. This was followed by pattern and model making, the work being upon a model of the marine engine already studied. The patterns being taken to the iron foundry, attention was given to the processes of moulding and casting, and work in the machine shop was begun and carried out to the end of the year. Beside learning to do the work on which they are directly employed, the students have opportunities for inspecting other work going on in the shop, which is equally valuable to them. Instruction has been given to the first year men in land surveying during the second half-year, and the field work for all the classes has been under the supervision of the Professor. The department has been the recipient of favors from the Atlantic Works, the Hinkley Locomotive Works, and from the chief engineer of the Navy, Geo. W. Melville.

The study of Physics was pursued by twenty-one juniors according to the programme through the year. Twelve seniors took a course of twenty-five lectures upon the conservation of energy. This course has been offered because of the great importance of the subject in industrial life, and especially in its philosophical relations. It has been treated altogether by lectures, because there is no adequate treatise upon it. After this course a class of eighteen seniors entered upon the study of Spencer's First Principles, which lasted through the year. Two graduates took physical laboratory work through the year, with special adaption to teaching Physics experimentally. There have been added to the outfit of the department the following pieces of apparatus, all of them electrical. A Ball dynamo and twelve lamps, from Col. French and Mr. Ball of Boston; an Emerson power scale, from F. H. Crane of Boston; incandescent lamp, sockets and switches, from Bradford Ames;

phospher bronze commutator sections; several belts from the Underwood Belting Company of Boston; one thirty-inch friction pulley, from the American Tool Company; counter shaft and pulleys, from Mr. Whittier; two thousand feet number six electric light wire, by the Professor. All of these were gifts to aid in the building up of an electrical department. There is very great need for more room and apparatus for general physics.

The development of the electrical side of physics has necessarily crowded out experimental work of other kinds, as the room has been needed for the technical students. Experimental physics has a high educational value which has been recognized by all the higher institutions, and extensive laboratories have been added to the equipments of many colleges. Within five years such structures have been provided at Harvard, Yale, Cornell, Columbia, Johns Hopkins, Rutgers, University of Pennsylvania, University of Michigan, North Western University, Brown and Colby Universities. In several of these there were already physical laboratories of respectable dimensions, but they were considered insufficient for the educational work to be done. A large part of the physical apparatus of the College is not only old in pattern, but is not at all adapted to the present wants of physics teaching. For twelve years there has not been added much of importance. For the best work and for economy of time, there should be a number of rooms provided, in each of which special kinds of work may be done. For instance, in one mechanical experiments; in another, microscopic work; in a third, photometry; in a fourth, photography; in a fifth, spectroscopic work; in a sixth, experiments in heat and so on. That these need to be in different rooms will be obvious when we recall the fact that the conditions necessary for one kind of work, are often impossible conditions for another. The microscope and the spectroscope cannot be worked conveniently together, when one wants light and the other darkness. Rooms then should be provided and adapted to their special purposes, with cases in them for the protection of the apparatus used in them. In this manner it would be possible to give instruction in physics to a much greater number of students than otherwise with a given number of instructors, and each student would do much better work when so spaced off and separated from his fellows. It is important to maintain an electrical course in the College for such as insist upon such work, but it is also desirable to make the untechnical courses not only educationally useful but attractive.

The class in mechanics, composed of twelve sophomores, nine engineers, and eight special students, met the assistant Professor of Physics three hours a week during the second half-year. The work did not differ materially from that done in the years immediately preceding. The second year electrical engineers, five men, worked in the laboratory six hours a week for the year, using Stewart and Gee's Practical Physics much of the time. The third year electrical engineers, four men, besides the usual recitations and laboratory work, have had considerable experience in the engine and dynamo room, both at the College, and to some extent at the station of the Somerville Electric Light Company.

One graduate spent his whole time in the laboratory throughout the year. Two others, candidates for the masters' degree, worked here half of the time. Twenty-two undergraduates, excluding electrical engineers, worked in the laboratory, most of them six hours a week for a half-year, but a few spending much more time than this. Never before have there been so many men electing this line of work, and the resources of the department have been sorely tried to find profitable employment for them. The amount of apparatus constructed greatly exceeds that of any previous year. Among the principal articles may be mentioned two dynamos, each weighing over three hundred pounds; nine Thomson reflecting galvanometers, in wooden cases; an S. P. Thompson bridge; two electric light sixteen-plug switchboards; and a new form of magnetometer. We now have a satisfactory arc-lighting outfit, but for incandescent, motor, and alternating work we need much more; and we should have a storage battery of fifty odd cells. A considerable outlay is also necessary for instruments of precision.

The department of general Chemistry had, in addition to its regular lectures, nine students electing chemical laboratory work in general chemistry, during the winter term, and two students, seniors, continuing their work in qualitative and quantitative analysis. During the second term there were seventeen students electing chemical laboratory work. As there were accommodations for but fifteen, we were compelled to refuse desks to two students. In the private laboratory there were, besides the two instructors of chemistry, two post-graduate students taking chemistry as work for the A. M. degree.

The laboratory of general Chemistry published the following papers during the year :

I. Reply to Johannes Wislicenus' criticism of A. Michael's remarks on geometric isomerism. By Arthur Michael.

II. Concerning isomeric chlorcinammic acids. By Arthur Michael and Hunter Pendleton.

III. Concerning the product of addition of hydroiodic acid to crotonic and isocrotonic acids. By Arthur Michael and Paul C. Freer.

The work in the department of Modern Languages during the past year has not differed materially from that of the year preceding. The number and size of the classes with indications of the work accomplished, will be found in tabular form on page 21.

The need of an increase in the teaching force has been emphasized anew, undesirable classifications having been made to diminish somewhat the excessive demands upon the instructor.

In view of the large place now occupied by the modern languages in our curriculum of required studies, and of the great extent to which the choice of electives falls in this department, one may well question whether there is now any logical reason why French and German should form a single department, any more than Greek and Latin, which combined may, and sometimes do, require fewer hours of class-room work. Whatever subdivision of work may be found feasible, it would seem very desirable to secure the services of an able and experienced teacher; for while the undergraduate instructors who have assisted in the elementary work in French for the past few years, have doubtless done effective work with the class committed to them, wider scholarship and pedagogic training would seem indispensable, if more advanced classes are to be entrusted to an assistant.

|  |  |  |  |  |
|---|---|---|---|---|
| German I. | 1st half-year.<br>2nd " | 5 in Class.<br>4 " | 3 a week.<br>3 " | Read Wallenstein, with portions of Düntzer's Com.<br>" Maria Stuart; Torquato Tasso. |
| German II. | 1st "<br>2nd " | 3 "<br>3 " | 3 "<br>4 " | " Müller, Geschichte (Germany from 814-1254.)<br>" Hermann und Dorothea; Minna von Barnhelm. * |
| German III. | 1st "<br>2nd " | 17 "<br>15 "(elec.) | 6 "<br>3 " | Joynes-Meissner Grammar; Im Zwielicht I.<br>Hermann und Dorothea; Minna von Barnhelm. |
| French I. | 1st "<br>2nd " | 6 "<br>3 " | 3 "<br>3 " | Le Romantisme Français; Hernani; Ruy Blas.<br>Cinq Mars; Translation into French. |
| French II. | 1st "<br>2nd " | 14 "<br>13 " | 3 "<br>4 " | Tableaux de la Revolution Française; Athalie.<br>Phèdre; Mithridate; Chardenal's Second Course, and Advanced Exercises. |
| French III. | 2nd " | 21 " | 6 " | Chardenal's First Course; Lacombe, Petite Histoire du Peuple Français. |
| * French IV. | 2nd " | 5 engineers. | 6 " | Chardenal's First Course: Selections from. |
| * Taught by Mr. C. L. Reed. |  |  |  | * Recited with German III., reading history in the extra hours. |

The work in the Department of Rhetoric, Logic and English Literature presents little variation from the detailed statement of one year ago. The re-arrangement of studies therein discussed, goes into effect the coming year. Preliminary changes during the past year call for no special mention. The required studies, first half-year, were, logic, seniors; rhetoric, sophomores and philosophical freshmen; rhetoric, third engineers. These occupied four hours a week each, including time given to composition. The elective studies for the same time were, English literature, a mixed class, composed chiefly of seniors ; analysis of speeches, also a mixed class. These occupied three hours a week each. The required study, second half-year, Psychology, juniors four hours a week. Elective studies for the same time, English literature, two classes, one consisting chiefly of seniors and juniors, and during a part of the time met in two divisions; the other consisting chiefly of sophomores ; also logic of Christian evidences, lectures attended by the entire senior class without exception, and substituted at the request of the class for other elective studies offered in the catalogue. Elective classes occupied each three hours a week.

The Department of Oratory has included all the students of the sophomore and freshmen classes of the College of Letters, together with the students from the departments of Engineering who had elected the study of expression. It has also included all students of the senior and junior classes of the College of Letters, and all students of the Divinity School who make oratory an elective study. The work continues to be mainly technical and elementary in the elements of pantomime and voice production, and in class exercises in the analysis of discourse for expression in reading and speaking, must remain elementary, and, in any true art sense unsatisfactory, until more time is at the disposal of both the student and the teacher. The class exercises in the senior and junior classes were from Shakespeare's Hamlet, and in the sophomore and freshmen classes from Longfellow's Miles Standish. Declamations and readings were given once each week in the large hall.

The Professor of Oratory feels that he cannot too strongly approve the action of the President and Faculty in the appointment of commencement speakers, who had shown during their college course at least fair aptitudes for public speaking. As a result of this well considered action, the large audience present at our last commencement exercises listened to a creditable presentation of, in the main, well written and well spoken themes. Our prize speaking and reading continues to draw to the hill large and interested audiences. Perhaps no one of our New England colleges presents on the whole speakers trained to better art form, or to a closer analysis of thought and passion. Yet we can scarcely be said to hold our own against the finer and truer training of the technical schools of expression.

The accessions to the Library for the year have been seventeen hundred and seventeen volumes, four hundred and forty-seven pamphlets, and two thousand and nine numbers of periodicals. Purchased ninety-eight volumes and four hundred and seventy-eight numbers. Of the volumes purchased, seventy-seven were bought from the income of the Joy Fund, and seventeen from the income of the Vannevar Fund. Nineteen volumes were returned to the Department of the Interior, and the total number now in the Library is twenty-five thousand two hundred and fifty-five volumes.

The Ryder donation was a very valuable addition to the Library, and consisted of one thousand four hundred and forty-one volumes, one hundred and twelve pamphlets, one hundred and one numbers, a quantity of Confederate documents and newspapers, the handsome cases in which the books were kept and a fine portrait of Dr. Ryder, all of which are now in a room specially fitted up for them. The new room adds to the cares of the Librarian, and gives another place to be searched when books are wanted, thus rendering an assistant almost necessary.

The President gave instruction to the seniors regularly four hours a week during the first half-year in ethics, and in political economy four hours a week for the second half-year. An elective class of eight seniors met three times a week during the second half-year for instruction in ancient law.

The attention of the Trustees is called to the accompanying reports of the Dean of the Divinity School and the Director of the Barnum Museum of Natural History.

ELMER H. CAPEN,

*President.*

Tufts College,

September 19, 1889.

# THE DIVINITY SCHOOL.

# THE DIVINITY SCHOOL.

*To the President:*

In conformity with the requirements of the institution, I herewith respectfully report the condition and work of this department for the college year of 1888–89.

The whole number of students registered during the year was thirty-three, distributed in the several classes as follows: Seniors, four; Middlemen, eight; Juniors, eleven; Sub-Juniors, eight; and Specials, two. The number who entered the past year was ten. The number of applicants was twenty, of whom one-half were, on examination, rejected on account of imperfect preparation. Though regretting the disappointment this occasioned to the young men desirous of preparing for the Christian ministry, the Faculty felt justified in rejecting them, since they could not advantageously pursue the course of study here prescribed, and besides the Faculty fully sympathizes with the Trustees in the desire and purpose to raise the standard of work in the School as rapidly as possible. Pursuing the course thus adopted, it is confidently believed that we shall at no distant day fill our School altogether, or nearly so, with those who have enjoyed the advantages of a college education, or a course of studies essentially equivalent to it. Our Church is happily more and more demanding a thorough education in its ministers. Its need to-day is a larger scholarship. A better educated ministry means a better educated people, and a wider influence and a larger success.

In the course of the year, I regret to say, the Faculty found it necessary, for reasons which I need not here specify, but which seem to them sufficient, to advise two of the students but recently received, to withdraw from the School, which they did. This left but thirty-one to go on through the year.

The course of study and the work of the School were the same as were reported last year, with only such minor changes and improvements as larger experience in the business of instruction naturally suggested. In the study of Church History, the course was so enlarged as to include the history of Rationalism. Our students should, under the existing controversies of the time be made acquainted with the origin, progress, and character of rationalistic thought.

A large class, I am gratified in saying, elected the study of Hebrew, and found themselves so interested in its pursuit that they were anxious to continue it steadily through the year. To allow this imposed so much labor on Professor Harmon, who had charge of the class, that it became necessary to employ some aid in instruction. Under the permission of the Trustees, L. O. Williams, A. B., of the senior class, was engaged to give lessons in Greek. His care and skill were not only exemplary, but worthy of high praise.

Courses of Lectures on subjects of interest to the students were, during the year, given in the School by the Rev. C. W. Biddle, D. D., and the Rev. E. L. Houghton, which were not only appreciated by the students, but were of a character to be highly useful to them.

With the largest number of students, I believe, which the School has ever had, and the devoted and faithful work of both teachers and pupils, I think I may safely say that this department never enjoyed altogether a more profitable or prosperous year.

While four graduated in regular course, only two received the Degree of Bachelor of Divinity. This was the result of the action of the Trustees, who, in the hope of promoting the interests of theological learning, have ordered that hereafter only Bachelors of Arts should be entitled to the degree of Bachelor of Divinity. This action on the part of the Trustees was a wise one. If this degree is worth anything, it should be fairly earned, and as it is the settled policy of the College to raise the standard of scholarship in every department as far as possible, and especially to encourage young men proposing to enter the ministry to prepare themselves by the training of the college, it is well to discriminate more widely, than was formerly done, between graduates who had before earned the degree of B. A. and others.

I cannot omit the mention of a circumstance connected with our School, which may be regarded as novel, at least a departure from all former precedents. One of the graduates of last year, Mr. T. O. Marvin, last spring received and accepted an invitation to settle over a parish in Albany, N. Y. But he had an earnest desire to receive ordination in Massachusetts before formally taking his place in the parish, and especially here where he had received his theological education, and among his former associates in the institution. Arrangements were, therefore made, and under the sanction of the Massachusetts Committee of Fellowship and Ordination, the service was duly performed in Goddard Chapel. The impression made by this service was so pleasing that the whole class about to graduate, and others who were about to leave the School and enter the ministry, sent in a petition, asking that before leaving the institution they might receive together the rite of ordination in a similar manner. The Faculty saw no impropriety in such a measure and granted the request. The Committee of Fellowship and Ordination caused the candidates to be examined, and arrangements were made for a special ordination service in the chapel on the afternoon of June 12, one week before the College Commencement. H. G. Dunham, C. P. Hall, E. E. Margraff, A. A. Ross, W. H. Trickey, and L. O. Williams were duly ordained. The service was simple, but appropriate and very impressive. A representative of the Committee of Fellowship and Ordination was present, and read the record of the Committee's action. But what gave especial interest to the occasion was the presence of the venerable Lucius R. Paige, D. D., who had recently passed the eighty-seventh anniversary of his birth day, having been in the Christian Ministry for sixty-six years. To him was assigned the duty of giving the right-hand of fellowship, which act he performed by reading an address on the subject with singular clearness and force. Altogether the service was appropriate, and elicited from all present expressions of uncommon satisfaction and pleasure. Whether this is to form a precedent and our theological classes will, on their graduation, ask also to be ordained to the work for which they have been preparing themselves, and in the very institution where their studies have been pursued, the future alone can determine.

One circumstance only threw a shadow over this pleasant service in our school life. That was the illness of one of the candidates for ordination, Mr. Henry Eugene Robinson, who was to have graduated the next week. We only knew on the day of ordination that he was ill in Vermont, and too ill to be present. The shadow deepened afterwards, for in a few days we were saddened by the news of his death. He was a young man of good promise, devoted to the interests of the Church, an earnest and consecrated Christian.

Of the need under which our School still suffers, of a Divinity Hall, an edifice designed and suited to its purpose, I will not here speak. That it is attracting the attention, not only of the Faculty, the students, and the alumni, but of the Trustees and the public, is a source of thanksgiving and hope.

Respectfully submitted,

THOMAS J. SAWYER,

*Dean*

Tufts College,
September 19, 1889.

# THE BARNUM MUSEUM.

# THE BARNUM

# MUSEUM OF NATURAL HISTORY.

*To the President:*

During the past year courses of instruction have been given in Botany, Physiology, Biology, Crystallography and Blowpipe Analysis.

The following valuable specimens have been contributed by the Hon. P. T. Barnum:

1. The skeleton of a White Rhinoceros, whose mounted skin was received last year.

2. The skeleton of a Nilghau (Portax pictus), an East India antelope.

3. The mounted skin and skeleton of a Coati (Nasua rufa).

4. The mounted skin of Jumbo, the famous African elephant, formerly in the menagerie of Mr. Barnum.

Besides these, important contributions have been made by other friends of the College.

1. A suite of excellent corals from the coast of Florida, by Mr. J. D. W. Joy, of Boston.

2. A finely mounted Florida rattlesnake, over six feet in length with fifteen rattles, by the Hon. Charles Whittier of Boston.

3. An extensive collection of Colorado minerals in five large cases, by the Rev. Selden Gilbert of Allston. Of this, further mention will be made in the next annual report of the Museum.

4. The bow, bow-sheath and quiver of oxhide, containing three dozen poisoned arrows, formerly the property of Red Cloud, the famous Chief of the Sioux Indians, taken

from him by Lieut. Brett, of the regular army, in 1876, when the Sioux were disarmed by order of the General in command of the Department. These unique and valuable Indian relics are the gift of Major Joseph B. Campbell, United States Army, formerly in command at Fort Warren, Boston Harbor; now stationed at New Orleans, Louisiana.

5. A plaster cast of the head of Crowley, the well-known Chimpanzee, which recently died at the Central Park Menagerie, in New York, the gift of the Trustees of that institution, through their president. Morris K. Jessup.

The minerals, fossils, skeletons and other natural curiosities in the show cases of the gallery, have been re-arranged and properly labelled.

Jumbo was brought to the Barnum Museum on Fast Day of the present year, and moved into the vestibule the following day. All the wood-work was removed from the great arch of the portico, leaving barely room for the entrance of the largest mounted elephant of modern times. It will be taken away, September 20, to be exhibited in London during the coming winter. About the first of April of next year, it will become a permanent attraction of the Museum. During the five months of its exhibition here the number of visitors to the Museum was largely increased.

Your attention is again respectfully invited to the need of additional cases for the proper exhibition of specimens which have been accumulating during the past two years.

Respectfully submitted,

JOHN P. MARSHALL,
*Director.*

Tufts College,
September 19, 1889.

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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

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# ANNUAL REPORT

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1890.

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen :*

The President of the College has the honor to submit the following report for the academic year, 1889–90; namely, from September 19, 1889, to September 18, 1890.

The Corporation has met with a loss during the year in the death of James O. Curtis, who was both in years and service, one of its oldest members. Mr. Curtis's interest in the College dated from its inception. He was an intimate friend and associate of the first President, Dr. Ballou, and his loyalty and devotion continued without abatement through the succeeding administrations. For many years, until the infirmities of advancing age compelled him to relinquish the work, he gave a great deal of time to the direction and supervision of the external affairs of the institution. Upright in his life, strong and cordial in his friendship, painstaking and faithful in every trust committed to him, full of good works and unostentatious piety, he deserves the grateful remembrance, not only of his associates in this body, but of the entire community.

Early in the year Arthur Michael, who, for ten years, had held the Professorship of Chemistry, and who by his skill and knowledge had done much to extend the fame and influence of the College, resigned his professorship to accept a call to Clark University. Arthur M. Comey, Ph. D., was appointed to fill the chair made vacant by Professor Michael's resignation.

Frank W. Durkee, A. M., has been appointed Instructor in Chemistry.

John S. Lamson, A. M. B., has been appointed Walker Special Instructor in place of Milton G. Starrett, whose term expired by limitation.

The whole number of students admitted to the College in all departments is forty-six. They are distributed as foilows:

| | |
|---|---|
| Freshmen . . . | 9 |
| Third Engineers . . | 2 |
| Second Engineers . . | 2 |
| First Engineers . . | 16 |
| Special Students . . | 6 |
| Divinity School . . | 11 |
| Total . . | 46 |

The whole number of degrees given in course at the last Commencement was thirty-two as follows:

| | |
|---|---|
| Bachelor of Arts . . | 12 |
| Bachelor of Mechanic Arts, | 9 |
| Bachelor of Divinity . | 8 |
| Master of Arts . . | 3 |
| Total . . . | 32 |

The whole number of students enrolled in the College is one hundred and forty-five, being five more than last year. They are distributed as follows:

| | |
|---|---|
| Undergraduates . . | 102 |
| Divinity School . . | 34 |
| Graduates . . . | 9 |
| Total . . . . | 145 |

A number of gentlemen in Brooklyn, New York, having made a subscription to enable the Rev. A. P. Putnam, D.D., to give lectures upon the history of Bible lands, the work was entered upon during the second half year with much interest and enthusiasm. The lectures are free to all the members and officers of the College and to the general public. They will be continued through the next year and it is hoped that permanent provision will be made for them. The field of knowledge to which they relate is attracting the attention of scholars and educated men more seriously than at any previous period of our civilization. The colleges of the country are beginning to recognize the importance of this branch of historical learning. It is fortunate that the thoughtful kindness of friends in Brooklyn has enabled us to be among the first to give distinct attention to this department of study.

The Trustees desiring to augment the resources of the college, appointed last year the Rev. A. J. Patterson, D. D., to work in this interest. During the year now closing this work has been pressed very earnestly and vigorously. A good degree of success has attended the efforts of Dr. Patterson. The number of scholarships in the gift of the College for which there has been and still is great need to assist deserving young men of limited means in obtaining an education, has been augmented to the amount of thirty-two thousand dollars.[*]

The Trustees have received a bequest of two thousand dollars from Maria P. Winn of Woburn. They have applied the same to the establishment of a scholarship in her name. This scholarship is included in those previously mentioned.

The executors of the will of the late William H. Ryder, D.D., have paid over the share belonging to us of the residuary interest in the estate, amounting to thirty-two thousand three hundred and fifty-six dollars.

The late Ezra M. Gay of Milford, New Hampshire, made provision by will that the College should receive a specific sum and an interest in the residue of his estate after the payment of other legacies. By an arrangement made between the son and only heir of Mr. Gay and the Trustees securites to the value of fifty-five thousand, two hundred and seventy-five dollars and sixty cents

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[*] Scholarships have been established in the following names: Rebecca T. Robinson, A. A. Miner, A. J. and J. L. Patterson, Charles and Eliza I. Whittier, Laura A. Scott, Travelli, James A. and Mary E. Norcross, Eugenia D. Stowe, Ara Cushman, Newton Talbot, John M. and Rebecca Anderson, William Oscar Cornell, Hannah L. Whiting, Martha Goldthwaite and George W. Quinby, D.D. The following Universalist parishes have established scholarships by annual payments, namely: Newton, Malden, Columbus Avenue, Boston, Cross Street, Somerville (the Munroe Scholarship,) Roxbury and Augusta, Me. The following persons have established Scholarships by endowments for a term of years, namely: Olney Arnold, Isaac P. T. Edmands, Henry E. Cobb and B. F. Spinney.

(55,275.60) have been transferred to us. This bequest is without restrictions and goes to the increase of the general fund.

Mr. S. F. Woodbridge, of Cambridge, has created a fund of two thousand dollars, the income of which is to be used for the benefit of the Divinity School.

The late George A. Dockstader, just before his decease, increased his donation by the sum of four thousand dollars, making the Dockstader fund in all ten thousand dollars. The income of the fund as far as need be, is to be used to aid students in the Divinity School who are preparing for the Universalist ministry.

Mrs. Mary T. Goddard has paid five thousand dollars into the treasury, the same being her final payment for the erection of the Goddard Chapel. A marble slab has been set up near the chancel, with an inscription declaring that the building is erected by Mrs. Goddard in memory of her husband, Thomas A. Goddard.

Two members of the Board of Trustees, Mr. Walter E. Parker and the Hon. Charles Whittier, have been very helpful in strengthening the working departments of the College. Mr. Parker, with the assistance and co-operation of Mr. Robert McArthur of Biddeford, Maine, the Kitson Machine Company of Lowell, the Hopedale Machine Company and the Whitin Machine Company of Whitinsville, has given a testing machine at a cost of one thousand dollars, and Mr. Whittier has been instrumental in adding much valuable apparatus to the electrical department.

The total increase of the funds of the College by gifts during the year is more than one hundred and thirty thousand dollars. If this rate of increase can be maintained for a series of years the Trustees will soon be relieved of the anxiety under which they have labored for some time in carrying on the work of the institution.

There are, however, two points of need on which specific emphasis should be laid. Although they have been dwelt upon in previous reports the present report would be incomplete if it should pass them by without notice.

First, the Divinity School should have an endowment of its own. The Ryder bequest should be increased immediately to a sum sufficient for the endowment of a professorship. The many friends of Dr. Ryder in this part of the country, in view of their great regard for him personally, and in view of his munificent gifts to many worthy institutions, should esteem it a privilege to assist in making this memorial of him in the College. Then there should be added a fund of one hundred thousand dollars, or, at least fifty thousand dollars. This, with the sums that are already assured, in wills that are not likely to be changed would place the School in a position of dignified independence, no longer relying for its support upon the unrestricted funds of the College.

Secondly, the Engineering department needs endowment and a building. There is no department in the College in which results so immediate and palpable could be secured. By making the slightest effort we could have next year at least fifty new men in this department alone. But our facilities are inadequate to the proper care of so many and we shall have to restrict the number entering to not more than twenty-five. With a scientific building suitably equipped and a small addition to our teaching force, we could have in the next three years one hundred and fifty or two hundred men pursuing our engineering courses. The department, moreover, would not be a rival to any other technological or scientific school in the country. The work that is done here is unique, while the men who come here for instruction are such as would be deterred by reason of the expense from attending most of the schools of a similar character. It would seem that in this age of immense fortunes derived from the application of scientific knowledge there ought to be found many who would be only too glad to furnish the means for turning out a still greater number of experts trained in the practical manipulation and use of the most recent results of scientific research.

But in addition to the above needs that are specific and make a distinct appeal to certain classes in the community, I must not omit to notice needs, which though more general are not less urgent. There is a strong demand, and one that cannot be delayed much longer, for an enlargement of the teaching force in the College of letters. The department of English is, and long has been, overburdened, it is a department to which men are turning with fresh and constantly increasing interest, and there is not a little complaint that the authorities have not done more to enlarge the opportunities for instruction here. There are several ways in which the desired result might be brought about. The professor of English might be relieved of the philosophical instruction that now consumes so large a portion of his time. He could then give his entire time to English work. Or, a young man might be appointed as an assistant in English, who should bestow a portion of his time upon work in some other department of instruction. Such an appointment I have repeatedly urged the Trustees to make.

There is great need of relief also in [the department of Modern Languages, and this need will soon become imperative. With the assistance now afforded, the work of the professor varies from seventeen to twenty-three hours a week.

I took the liberty to call attention in my last annual report, to the demand for a chair of history. This is a demand that is made not only by the undergraduates, but by young men who are about to enter the College. Not unfrequently do we lose students because of the slight provision we make for the systematic pursuit of historical studies. No college that fails to make this provision amply and fully is in all respects completely equipped. At this point we have fallen away from our early practice. The great attention paid to this subject by Dr. Ballou has been the occasion of lasting gratitude to him and to the College, from those who enjoyed the earlier instruction that was given in this seat of learning. In addition to the foregoing, I must not fail to mention that in my judgment the interests of classical learning in the College would receive a needed impulse, by the appointment of young men to assist the professors of Latin and Greek and be in training to fill those important chairs when they shall become vacant.

The recent discussion of the advisability of shortening the under-graduate course has commanded the serious and thoughtful attention of all our American colleges. So radical a departure from the ideas that have been uniformly entertained of the function and purpose of the college, and from the unvarying practice of the country, has awakened feelings akin to dismay in the minds of many who have the interests of the higher education at heart. Of course if knowledge be substituted for discipline and culture, if the cramming process takes the place of those calm and thoughtful methods by which the intellect of man finds its most complete development, it is possible that many young men might cover the ground embraced by the college curriculum in three years. But if the attainment of the Bachelor's degree is to be put within the reach of the majority of undergraduates in the shorter time by diminishing the courses of study now regarded as essential to it, few persons who have given attention to the subject will fail to esteem it as a lowering of the standard of general education.

The adoption of this plan by two or three of the leading universities of the country would be a blow aimed at the very life of the smaller colleges — the institutions that are now giving instruction to more than half the young men who receive collegiate education. For while the great universities, by reason of the number of their teachers and the multiplication of electives, may enable men to anticipate studies and so cover a greater amount of ground in a given time, this is impossible where the electives are necessarily limited and the teaching force is relatively small. The consequence would be either the extinction of the life of the smaller colleges, or a material outlay for an increase of the teaching staff that many of them would find impracticable. The adoption of this plan would render it necessary that the New England colleges, outside of Harvard and Yale Universities, should add at least one-half to their endowments. There are persons of sober judgment who think their funds would need to be doubled. Of course for some of them such an increase would be wholly out of the question. Nor can the difficulty be avoided by an attempt to assign the smaller colleges to an inferior place as compared with the universities, making the former tributary to the latter. For so long as the universities maintain undergraduate courses, and, in fact, make undergraduate instruction the chief part of their business—and there has been no intimation of a purpose on their part to abandon that practice—they are the distinct rivals of the colleges. The tendency of their rivalry, therefore, will be, if, in addition to the facilities they offer, they can permanently shorten, by a twelvemonth, the time of securing a degree, not to make the colleges their feeders but to extinguish them altogether. It is very well to speak of the American university as if it were already an accomplished fact, and as if it had certain clearly marked features that separate it widely and fundamentally from the American college. But in truth, with the exception of two or three experiments that are yet in their infancy, there is little to distinguish the so called university in America from the college, beyond the grouping around the central academic body of professional and technical schools, coupled with an opportunity, somewhat enlarged, for graduate study. Besides, many of the colleges, so called, are in a process of transition from an institution with a faculty of letters only to an institution with other faculties, either co-ordinate or supplementary. The bringing of the colleges into a position that shall be tributary and dependent as respects the universities may be easily accomplished in a magazine article, but it will be found very difficult of attainment in actual practice. The colleges and universities should work harmoniously side by side, and, in the main, along the same general lines. The vital interest of superior education demands that neither shall seriously antagonize the other, and neither seek the destruction of the other.

But why this haste in education? It is asserted that men are too old when they come to their professional studies and their professional work. If they are nineteen and a fraction when they enter college, in seven years they will be twenty-six and a fraction—young enough the most of us will agree to enter upon the great responsibility of practicing law, or to discharge the manifold and delicate duties of a minister of religion. If the physician, by reason of a more prolonged course of professional preparation, is a year older when he reaches his life work, it may well be asked, who wants a stripling by the bedside of those whose lives are most precious to him? It is maintained that the age of college graduates has been advancing in recent years. A careful study of the statistics may not bear out the claim. It is doubtful if it will. But if it does, the result springs in good degree from the material increase in the requirements for admission to college. The remedy then for the evil, if it be an evil, would seem to be in some abridgement of these requirements, or in such an improvement of the facilities of secondary instruction that men can be brought to college at an earlier age. For it must be plain in every philosophic view of the subject that if a youth has but seven years to give to study from the time he enters the secondary school until he receives the degree of Bachelor of Arts it is better that he spend three years in the fitting school and four years in the college, than four years in the fitting school and only three years in the college. A calm and candid appeal to public intelligence, I am sure, will vindicate the way that has been tested by experience and that so fully harmonizes with all our ideas of the end to be sought by the instruments of discipline and culture.

Permit me to call attention in detail to the work of the College.

In the department of Latin the sophomores did about the usual amount of work, reading the Satires of Horace, Cicero's Lælius and the Catiline of Sallust, reciting once a week also in Latin composition. The freshmen read the 21st book of Livy, Cicero's Cato Major and the Satires of Horace, recited three times a week in Roman history and Antiquities, using Liddell's History and Ramsay's Manual of Antiquities, and once a week in Latin composition. Several lectures were given to the class also, on subjects connected with their work. Three juniors, candidates for honors, elected Latin for the year, reading Cicero's Lælius, the Satires of Juvenal, the Menaechmi of Plautus, and selections from Pliny's Letters. They had one exercise a week also in comparative philology.

During the year the freshmen received instruction in Greek six times a week for the first half year, and five times a week for the second half. The text books used were, Plato's Protagoras, Homer's Odyssey, books I., II., III., Thucydides, book VII., forty-six chapters. These text books furnished also the material for sight reading. Instruction was given to the class once a week in Greek prose composition through the year. The sophomores recited four times a week for the first half year. The text books were: Thucydides, book V. (continued), Euripides' Iphigeneia in Tauris. Again a good deal of time was spent in analyzing the lyrical parts of the drama. One hour a week was devoted to Greek composition. Two sophomores elected Greek during the second half year, reciting three times a week. They finished the Iphigeneia in Tauris, and read a great part of the Clouds of Aristophanes. One hour a week was devoted to reading Herodotus at sight, and one hour to Greek composition.

In the Mathematical department the work as a whole has shown no marked change from that of the year just preceding. About the same percentage of students have done their work faithfully, some few showing themselves so endowed with mathematical talent that their work presented no difficulties that they could not readily master, and about the same percentage have labored fruitlessly as in former years. In the work of the college course no change has been made in the required studies, but at the suggestion of the professor the faculty put the beginning of elective work at the middle of the sophomore year, just at the completion of the required work, and as a consequence four sophomores elected the calculus. The mathematical work of the engineers has been modified in two respects. Physical arithmetic has been adopted as a new study for the first half of the first year. Both the second and first year men were united in this study. And the study of the calculus instead of commencing at the beginning of the second year, was put forward to the beginning of the second half of that year. The professor is satisfied with this change, and confident that the students will be benefitted by the new study, and will take up the study of the calculus better prepared for it than they could have been under the old arrangement.

The Walker Special Instructor during the first half year taught the following classes. A division of the freshmen and first engineers in algebra, four hours a week. A class of fourteen of the sophomores in analytic geometry, four hours a week. That of second civil and first civil and electrical engineers in drawing, six hours a week. A class composed of second electrical engineers and sophomores, one hour a week for eight weeks, in practical trigonometry. The first engineers in descriptive geometry, three hours a week for four weeks. Part of the time for drawing was spent in field work with the three classes of civil engineers, Professor Bray taking the class in drawing. The second half year the work was as follows. Drawing and field work, six hours a week, with the same classes as in first half year. Text book surveying, three hours a week, with first civil engineers and three students who elected it. Solid geometry and trigonometry, four hours a week, with a division of freshmen and first engineers.

During the year the Professor of Civil Engineering gave instruction in applied mechanics, engineering, roads and railroads and the steam engine. In place of land surveying he had the class in descriptive geometry, the work in surveying having been done under the Walker instructor. He also gave instruction to the seniors in drafting and designing, taking up a variety of subjects in the different branches of engineering, and also doing some work in architecture. The work done in the carpenter and machine shops has been of better quality than formerly; greater accuracy being attained in following the working drawings, the labor of preparing which was done in the department. More time has been given to the study of hydraulics than in the preceding year, the text book used being A Treatise in Hydraulics by Merriman. No experimental work was done on account of the lack of facilities and apparatus.

In the department of Physics the junior class was met at the programme hours. The various subjects were treated by recitations and lectures, except electricity, which was treated altogether by lectures, for the reason that no text book presents the subject either for matter, arrangement, or important details, in any way justified by the knowledge we possess to-day. Such a course may make less of a demand upon the student than preparation for a text book recitation, but in the end the students acquire a better knowledge of the principles of the science, and this is a sufficient justification for the method. There were twenty-eight members of this class. An elective course on the conservation of energy was taken by a class of fourteen seniors, the first half of the year. This was largely attended by the students in the Divinity School who were invited to attend. During the last half year eleven seniors studied Spencer's First Principles. A course of lectures on the practical application of electricity to the various arts was given twice a week during the last half year. There was also one student taking a graduate course, who aided the professor in the preparation of experiments for other classes, to some extent, aside from his special studies for the degree of Master of Arts. Last year the course in astronomy was changed from the junior year to the senior year, and lengthened from three times a week for six weeks, to twice a week for a half year. This change gave the additional time of six weeks to the juniors in physics.

Under the Assistant Professor of Physics seven members of the third electrical engineering class studied Kemp's Electrical Testing and Thompson's Dynamo Electric Machinery, meeting three times a week throughout the year. They also spent twelve hours a week in the physical laboratory and dynamo room. Among other practical studies they investigated the magnetic permeability of various irons. Incidentally considerable apparatus was constructed. The second electrical engineers, twelve men, worked six hours a week in the laboratory, following Stewart and Gee's Practical Physics. Several other students worked in the laboratory more or less, generally six hours a week for a half year. The class in mechanics, fifteen sophomores, eighteen first engineers, two second engineers, and five special students, forty in all, read Daniell's Physics, meeting three times a week. During the spring the Library and reading room were fitted with incandescent lamps, over forty lamps being installed. No labor or expense was spared to make this installation as safe as it is possible for any system of artificial illumination to be. For this purpose the Sawyer Manufacturing Company gave us fifty lamps and key sockets; the Okonite Company eight hundred feet of underground mains; the American Electrical Works, and the Simplex Company conductors for interior wiring; and nine prominent gentlemen of Cambridge ninety dollars for purchasing electroliers and fixtures. The current for lighting the Library is supplied by two dynamos constructed for the purpose by the students. The value of the installation, including dynamos, is probably about eight hundred dollars, the cost to the college something over one hundred dollars. Among various other gifts we have received from A. J. Wilkinson & Co. a large screw cutting lathe that supplied a long felt want. The need of other tools such as a milling machine, drill and planer is very urgent. The advisability of founding several scholarships is suggested, the beneficiaries of which are to act as assistants in the physical laboratory. There will be room for six such assistants; two in the laboratories, one in the workshop, one in the dynamo room, one in the storage battery room, and one to assist the professor of physics in the preparation of lecture experiments. A graduate assistant to take charge of the more elementary part of the laboratory teaching will also soon be required. He might be a candidate for the second degree, and a scholarship yielding three hundred dollars a year would doubtless attract good men to this position. The care of our rapidly growing engineering classes is becoming a really embarrassing problem; nor does there seem to be any other solution than the erection and equipment of a suitably designed and commodious laboratory building.

During the first half year the Professor of Chemistry gave experimental lectures on general chemistry to the junior and second year engineering classes. A course in qualitative analysis was also given to two seniors, during the whole year, and a partial course in the same subject to eight juniors during the last half year. There were in the chemical laboratory eighteen students during the first half year, and sixteen during the last half year. A new desk was built during the fall of 1889 to accommodate eight students, increasing the capacity of the laboratory from twelve to twenty students. This was however found to be insufficient for the demands of the coming year, and extensive alterations have been made during the summer. The laboratory has been extended across the adjoining hall, and new desks with a capacity for twenty-three additional students have been built, thus enlarging the total capacity from twenty to forty-three students, all of which room will be needed the coming year. During the past year a candidate for the degree of Master of Arts has carried on advanced work in quantitative analysis in the private laboratory; the assistant in chemistry has been engaged in analytical and original investigations in inorganic chemistry, and original researches in organic chemistry have been carried on by the professor in charge. Several papers for publication were nearly completed at the end of the year, but only one was fully ready for publication, Ueber Aethandichinolylin. Arthur M. Comey, published in the Berichte der deutschen Chemischen Gesellschaft, XXIII., 1115.

In the department of Modern Languages, as regards number of classes, the amount of electives and the quantity of work performed, there has been little variation in the past year from those immediately preceding. In the first half year instruction was given to three classes in German, two in French and one in Italian. GERMAN III.—the elementary class—contained seven juniors, four sophomores (ph.), two specials and one theological student, and recited six times a week. The Joynes-Meissner grammar formed the basis of instruction, and the class read as language drill, "*Im Zwielicht*," (about one hundred 12mo. pages) and Schiller's *Neffe als Onkel*. GERMAN II.—eight seniors, two juniors (ph.), one freshman (course A. ph.) and one special—was chiefly composed of students who had begun German a year before, electing three hours a week in the preceding half year. This class completed *Minna von Barnhelm*, commenced the term before, and read the greater part of Wieland's *Oberon.* (The same class was continued in second half year as German I.) GERMAN I. composed of two sophomores (course A. ph.) read the history of Germany from 800-1250 in Müller's *Geschichte des deutschen Volkes*, also Goethe's *Egmont*, with some practice in writing German. FRENCH II., two juniors, two freshmen (ph. B.) and one theological student, (the juniors electing after one half years work, the philosophical students entering with French) recited three and four times a week, and read in the half year *Andromaque*, *Mithridate* and *Athalie* (*Racine*). (The same class appears in the second half year as French I.) FRENCH I. (of first half year) was composed of five seniors, one junior, (ph. B.) and reciting three times a week, made something of a study of French social life in the 17th century. The text used was Professor Crane's "*Societé Française au XVII. Siecle*" with parallel readings in Molière (*Les Femmes Savantes* and *Les Preciuses Ridicules*). ITALIAN was elected by three seniors, one junior (ph. B.) A rapid study of the grammar was made with Grandgent's manual, after which some one hundred and seventy five pages of De Amicis *Olanda* were read. Two of the class continued the study through the year.

In the second half year there were two classes in German, two in French and one in Italian. GERMAN II. was composed of nearly all those forming III. in the first half year. All the juniors electing recited three and four times a week, and read a larger part of Wieland's *Oberon* and the first six cantos of Goethe's *Hermann und Dorothea*. The Philosophical students, with whom the study is required, were given a fourth hour for composition. GERMAN I., five seniors, three juniors (ph.) and one theological student, mostly in German II. in the first half year, recited three times a week and read Lessing's *Nathan der Weise* and Goethe's *Iphigenia*. Three of this class had composition one hour a week additional. FRENCH I.—the continuation of French II. of the first half—contained three juniors and two Philosophical freshmen. They continued reading the classic dramatists and completed the *Phedre* of Racine, *Horace* and *Polyeucte* (Corneille), *Le Misanthrope* (Molière) and had one hour a week in composition, using Chardenal's Advanced Exercises—four hours a week in all. FRENCH II.—elementary—contained twelve sophomores, nine engineers and four theological students. Reciting six times a week, they used as a grammar advanced sheets of Edgren's new work and read some one hundred pages of Super's Reader. A second division of this class, ten engineers who had had no previous language study, was instructed by Mr. W. F. Sewall of the senior class. The division completed Edgren part I, and read some fifty pages of Super's Reader. ITALIAN. One senior and one junior continuing Italian began the previous half year, read the *Inferno* of Dante. Besides the text much reading of prose was called for as the fully annotated editions of

Bianchi and Scartazzini were employed. It was a much interested and very interesting class.

The statement of work in the department of Rhetoric, Logic and English Literature for the year differs but little from that of the previous year. Logic has been removed from second half to first half senior year, and rhetoric in the department of engineering has been made a second year study. A weekly exercise in extemporaneous composition has been required of first year engineers, and for a little more than a half year, the same of regular freshmen. Work in English literature is subject to considerable variation, as determined by the make up of classes. The selection of authors, the amount to be read from each, the direction and character of critical work attempted, are in good part left to the choice of the respective classes, of course within limits definitely set by the instructor. During the last year, for example, somewhat extended selections from Browning were read by one class; by another the critical study of modern fiction was carried much beyond the usual limits. The more the work of the department becomes specialized, the greater need appears of an adequate teaching force.

At the commencement of the work of the past year in the department of Oratory it was suggested that the study of expression be made an elective, open to all the students of the College. The brief time allowed this important branch in the curriculum will make it necessary more and more, as the College increases, to concentrate work upon those students whose tastes and aptitudes lead them to make a study of the modern forms of the art of expression. More and more it has become a necessity that expression shall be the accent of the life and personality of the speaker. This life and personality must declare itself through a technique founded upon the æsthetic laws governing all expressions of fine art. It is the conviction of the professor that our colleges are doing little to advance the modern science and art of expression. Our advanced institutions of learning seem not to have discovered that an entirely adequate philosophy of expression, founded upon a true psychology, has, in these days, presented such a classified knowledge as to make good its claim to be ranked among the recognized sciences. One can confidently predict that in the near future the best endowed man must be called to the chair of expression in our colleges and universities. The class which, last year, elected this branch was quite large and exhibited much enthusiasm. The professor recommends that no student be selected for the prize reading or speaking, who has not been a member of the class in expression during the entire time of instruction. The class exercises were from Shakespeare's Julius Cæsar. The work was largely technical and elementary. This must continue to be so, until more time is at the disposal of both teacher and student. The professor takes pride in calling attention to the marked improvement in our Commencement exercises, under the recent decision of the faculty, that no student shall appear at Commencement who has not developed, at least, fair aptitudes for public speaking.

The President gave instruction to the seniors four hours a week in ethics during the first half year and the same number of hours during the second half year in political economy. Seven seniors elected law throughout the year, and met three times a week, the subject being ancient law during the first half year, and international law during the second half year.

The accessions to the Library have been two thousand and ninety-two volumes, three hundred and eighty pamphlets and twenty-three hundred and forty-six numbers of periodicals. The largest donation was that of the family of the late Richard Frothingham, through Thomas G. Frothingham, and amounted to eighteen hundred and thirty-seven volumes, one hundred and sixty-three pamphlets, and eleven hundred and thirty-two numbers of periodicals. Although there were six hundred and fifty-seven volumes of duplicates among the books many are of such value that we may be able to exchange them to advantage. The donation adds a valuable collection to the history and politics of this country and Great Britain, and contains parliamentary histories and records from the earliest times. There are also many valuable biographies in the collection. Another valuable donation was that of fifty volumes of Italian literature from Eugene C. Skinner, M. D., of Detroit.

I desire to call attention to the reports of the Divinity School and the Barnum Museum of Natural History submitted herewith.

E. H. CAPEN.

Tufts College, Sept. 18, 1890.

# THE DIVINITY SCHOOL.

# THE DIVINITY SCHOOL.

*To the President:*

In obedience to the requirements of the government of the College I beg leave to report the condition and work of this department for the college year of 1889–90.

The year opened with thirty-four students, slightly the largest number in the history of the School. Of these, eight were seniors; seven middlemen; three sub-juniors, and four special students. Of these special students one was a recent accession from the ministry of another denomination, with several years' experience, respectable talents and attainments, who after a year's work in the school, is now doing excellent service in the missionary field of Ohio. Two others of these special students are graduates of the College, of several years standing, whose pursuits since leaving college had been of a literary and educational character, and whose hearts turned from their chosen vocations to the higher work of the Christian ministry. After a single year in the School, they have both received and accepted calls to old and well established parishes, one in Massachusetts, and another in Rhode Island, and are now actively engaged in the work of the ministry.

The School had reason to regret that one of the junior class, who a few months before had graduated from the College with honor, and deservedly enjoyed the reputation of Christian probity and worth, should have felt it his duty to dissolve his connection with it in order to become a member of the little party of missionaries our Church was sending out to Japan. We do not doubt that he will make a good use of his time and opportunities and will carefully study human nature under some new aspects, but we believe that there is no substitute, in the preparation for the ministry, for a good course of theological study and training.

During the past year the School has enjoyed what we believe to be its most successful and satisfactory period in its history. The same methods of instruction and work have been pursued as previously, except with such changes and modifications as larger experience has suggested. From the very beginning of the School the scope of its efforts has been constantly widening. At first the conditions of the Church and the narrow means at our command necessarily imposed the duty of preparing men to be acceptable and successful preachers. As we have gone on this preparation has become broader and deeper. The two years' course for Bachelor of Arts and three years for all others, have been extended to three years for college graduates and four years for others. Meanwhile, constant efforts have been made to raise the requirements of admission to the School. We are anxious for the time when all students proposing to take our full course of study, and ambitious to share the honors the College has to confer, shall either be graduates from college or have made attainments equivalent to the degree of Bachelor of Arts. Others, in exceptional cases, might be admitted for shorter periods of study and special courses. But the Church fails in an obvious duty so long as it neglects to afford assistance in the education of young men for the ministry—I mean assistance in the academy and college as well as the theological school. If there is any profession which demands the most thorough education it is that of the Christian ministry. And this is especially true in the present age when science is so assumptive and alluring, and when under its influence Christian faith is by many thought little better than an idle superstition. The ministry is to be filled in the future as it has been in the past largely by the sons, not of the rich, but of the poor. Hence, the Church must either attend to their education or accept a ministry poorly educated.

It is interesting to reflect that half of the whole period of our denominational history in this country had been passed before a single school of any kind was called into existence, and then only two academies poorly endowed. These served our purpose for twenty years more, when grace was given to found this College, which has been followed in different parts of our extended country by three others, and in due time by three theological schools. It is useless to inquire whether we have been wise in the creation of so many schools, or whether it would not have been better to concentrate all our resources upon one or two. They exist as they are, and all are doing good work, and aiding in changing the condition of our Church as to its estimate of the need and value of education, but changing also, and that rapidly, the position we sustain in the estimation of the religious world about us.

In this important work it is gratifying to know that Tufts College, the oldest of our institutions of this class, has borne an honorable part. Though but thirty-five years old, and though it is but twenty-one years since our Divinity School was opened, still the College has already provided more than one hundred of our active ministry, and has therefore aided in the education of more than one-sixth part of the efficient ministerial force of the Universalist Church. Meanwhile, the Alumni of the College are scattered over the length and breadth of the country, and in the various professions and business callings of life are witnessing the honors and rewards of earnest, educated toilers among their fellowmen.

A year ago I indulged the pleasing hope that through some movement of the undergraduates of the School, seconded as it was by the Alumni and some other friends, a divinity hall, designed for the use of the School, was finally to be erected. The need of such an edifice is patent. The increase in the number of the students, and the want of better accommodations, make this necessary. But my hopes, I know not how, were doomed to disappointment.

Respectfully submitted,

THOMAS J. SAWYER, *Dean.*

Tufts College, Sept 18, 1890.

# THE BARNUM MUSEUM.

# THE BARNUM

# MUSEUM OF NATURAL HISTORY.

*To the President:*

During the past year, courses of instruction have been given in Botany, Physiology, Biology, Geology and Mineralogy.

Valuable contributions have been made to the collections of the Museum.

The following specimens are the gift of Mr. Barnum.

The skeleton of a Hyena, (Hyæna striata).

The mounted skin and skeleton of a monkey, (Macacus rhesus).

The mounted skin and skeleton of a baboon, (Cynocephalus mormon).

The mounted skin and skeleton of a baboon, (Cynocephalus babuin).

The mounted skin of the wild sheep of the Atlas Mts. (Ovis tragelephas).

The skin and skeleton of a large Bengal tiger, now in process of mounting by Ward at Rochester.

Jumbo, after being exhibited in London during the winter was returned to the Museum in better condition than when taken away last September, and continues to be as great an attraction as ever to the old as well as the young.

The following important contributions have been received from the Smithsonian, through the kindness of Prof. Goode, the Secretary of that institution.

Eight large casts, as follows:

The standard inscription of Asarnaurpal, King of Assyria, 884 to 860, B. C. Original now preserved in Fairfax Seminary, Va.; slab, seven feet and a half in length by five in width.

A cast, eleven feet in length of a cowfish, (Grampus griseus).

Eight life size casts, as follows:

Two heads of blackfish, (Grampus melas), two heads of cowfish, (Grampus griseus), head of blue shark, (Carcharias glaucus), head of white whale, (Delhinapterus leucus).

These heads are neatly mounted upon wooden shields and now adorn the walls of the lecture room of the Museum.

Beautiful casts of American fishes, colored to life, as follows:

Salmo salar, (common eastern salmon), Salmo namaycush, (2 specimens lake trout), Elops saurus, (big eyed herring), Scomber scombrus, (mackerel), Lota lota maculosa, (burbot), Cynosion maculatus, (spotted squeteague), Paralichthys dentatus, (flounder), Clupea sapidissima, (shad), Carcharinus milberti, (blue shark, young.)

Casts of unique and noted objects:

Asaphus platycephalus, (trilobite), baby mask (from Aztec grave,) Mexico, Greenstone pipe, Santa Fe, N. M., Indian pipe from New York, Jade axe from Mexico, Indian pipe from Missouri, Aztec sacrificial stone from Mexico.

Marine Invertebrates, comprising one hundred and four species. Among these is an excellent Pentacrinus Mülleri, taken off the coast of Cuba. Collected by U. S. Fish Commission.

Specimens of Foraminifera from twelve different stations in the Atlantic Ocean. Collected by U. S. Fish Commission.

To Messrs. Houghton & Dutton of Boston, thanks are due for the loan of good mounted specimens of Alces Americanus (moose), and alligator Mississipiensis. These have been placed in the vestibule of the Museum.

The minerals donated last year by Rev. Selden Gilbert have been carefully examined and found to comprise some very desirable specimens, especially of ores of gold, silver and copper. There were about four hundred pieces in all.

A beautiful specimen of sea turtle (Eretmochelys imbricata) from Florida, has been donated by Hon. Charles Whittier.

Five large slabs of slate have been presented by Mr. William C. Ireland. Three of these, having finished surface, have been mounted in an appropriate frame, and placed on the north wall of the lecture room forming an excellent black board, three by twelve feet in dimension. The other two, showing natural cleavage, serve as good specimens of the slate from the quarries of Maine.

Eighty-four good specimens of Marine Algæ are the gift of Mrs. Maria H. Bray.

Hon. Newton Talbot has presented to the geological department an interesting series of rock specimens, collected by him during an overland trip to California.

From Rev. G. Collins, Chaplain U. S. A., has been received an interesting and very important collection of ethnological specimens, comprising twenty pieces, the handiwork of Alaska Indians, as follows: A basket and mat braided of grass, three models of boats, a fish hook, three wooden decoy birds and other carvings from the fragrant wood of the Alaska pine.

Additional room is very much needed for a proper display of the material that has accumulated since the last report. No specimen has been lost and no injury done to the museum building during the past year.

Respectfully submitted,

JOHN P. MARSHALL.

Tufts College, Sept. 18, 1890.

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# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

1890-91.

# ANNUAL REPORT

OF THE

# PRESIDENT

OF

# TUFTS COLLEGE.

## 1890-91.

BOSTON:
PRINTED BY WALLACE SPOONER,
17 PROVINCE STREET,
1891,

# PRESIDENT'S REPORT.

*To the Honorable and Reverend,*

*The Trustees of Tufts College.*

*Gentlemen:*

The President of the College has the honor to submit the following report for the Academic year, 1890–91; namely, from September 18, 1890, to September 17, 1891.

The corporation has suffered a serious loss in the death of Charles Robinson, LL.D., who since the decease of ex-Governor Israel Washburn, in 1883, has held the office of President of the board of trustees. Previously to that he had been for many years Vice-President of the corporation, frequently presiding at its meetings. His ample knowledge of the law, together with the judicial quality of his mind, enhanced the value of his services in these offices. He was elected a trustee in 1857, at the request of the founder of the College, who was his near kinsman. At an early date he became the legal adviser of the institution and continued to render service in that capacity without charge until his death. He was counsel also for many of the prominent benefactors of the College and in that capacity was largely instrumental in shaping the conditions of important gifts and bequests. His views concerning the policy and aims of the College were broad, enlightened and progressive, but his spirit was conservative, and he never gave assent to any action until all the steps for carrying it into effect had been carefully considered and determined. His interest in the College grew with the lapse of years until it came to hold a leading place in his thought and affection. At the time of his death he was contemplating important material aid and a service that would have put us all under the most lasting obligation. As it is, the College is indebted greatly to his wisdom and careful thought and not a little to his generosity.

About the middle of the college year, Moses True Brown, A. M., on account of the pressure of other duties resigned the chair of Oratory which he has held since 1866, a period of twenty-four years. In accepting his resignation the trustees voted to make him Professor of Oratory, Emeritus.

A new chair of English and Oratory has been created, and David Lee Maulsby, A. B., has been chosen to fill it. Besides the instruction in Oratory, formerly assigned to Professor Brown, Professor Maulsby will devote a portion of his time to teaching English subjects.

Frank E. Sanborn, B. S., has been appointed Walker Special Instructor in the place of John S. Lamson, resigned.

Anson B. Curtis, Ph.D., has been appointed Instructor of Hebrew and Old Testament.

The duties of Frank W. Durkee, A.M., the Director of the Gymnasium, have been enlarged by making him Instructor of Natural History.

Frank Pierrepoint Graves, A. M., has been appointed Instructor of Greek.

Willis F. Sewall, A. B., has been appointed Tutor of French and assistant in the Library.

The whole number of students admitted to the College in all departments is fifty-eight. They are distributed as follows:

| | |
|---|---|
| Freshmen . . . | 17 |
| First Engineers . . | 14 |
| Special Students . . | 12 |
| Divinity School . . | 15 |
| Total . . | 58 |

The whole number of degrees given in course at the last Commencement was twenty-eight, as follows:

| | |
|---|---|
| Bachelor of Arts . . | 12 |
| Bachelor of Mechanic Arts | 9 |
| Bachelor of Divinity . | 4 |
| Master of Arts . . | 3 |
| Total . . . | 28 |

The whole number of students enrolled in the College is one hundred and fifty-eight, thirteen more than last year. They are distributed as follows:

| | |
|---|---|
| Undergraduates . . | 114 |
| Divinity School . . | 36 |
| Graduates . . . | 8 |
| Total . . . . | 158* |

The prospect for the coming year is of a still larger attendance. Our means of accommodating all who will come will be put to a severe test. During the summer vacation West Hall has undergone a radical modification of its interior arrangements, increasing its capacity somewhat. But notwithstanding this, and notwithstanding the new dormitory about be erected for the Divinity School, there will be a need almost immediately for another building of moderate dimensions for the use of students.

For a number of years there has been a growing demand for increased facilities for the Divinity School. The importance of its work and the number of students under instruction have made larger and better rooms a necessity. At the same time the steady enlargement of the College of letters has rendered it equally imperative that the rooms occupied by the School should be vacated. In former reports the urgency of our situation in this regard has been dwelt upon at length. This year we are permitted to say that the very welcome provision has been made for the erection of a recitation hall and a dormitory for the Divinity School. In June last, A. A. Miner, D.D., LL.D., the ex-President of the College, communicated to the trustees certain conditions on which he would provide for the erection of a divinity building. His proposition was promptly and gratefully accepted, and on Commencement day the President of the College had the pleasure of reading the following letter:

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*Since the foregoing report was made to the trustees, 66 new men have been admitted to the College, and the whole number enrolled for the year 1891-92 will be fully 175.

*To the Honorable and Reverend President and Board of Trustees of Tufts College;*

GENTLEMEN :—The needs of the College for increased accommodations for students are pressing. A wider separation of the school of theology from the other departments of the institution is, on many grounds, greatly to be desired.

The removal of that school from its present quarters would add substantially to the convenience of the college of letters and of every other department. That these ends may be accomplished, a new building, which shall be exclusively devoted to the use of the school of theology, is found to be a necessity.

I am ready, therefore, gentlemen, should your judgment concur with mine, to secure to the College, by my personal bond, the sum of forty thousand dollars ($40,000), a sum presumably adequate to cover the cost of such a building and interest on that cost until the sum itself shall be paid.

It is my judgment, however, that such a building should not be erected until the sum of $12,000 is in hand for the erection at the same time of an accompanying dormitory for the students of such school. Most respectfully, your co-trustee,

*Boston, June 15, 1891.* A. A. MINER.

The suggestion contained in Dr. Miner's letter that other friends should be asked to contribute money for a dormitory was acted upon immediately. Generous friends of the College and of theological education have already pledged a sufficient sum to warrant the trustees in going forward with the enterprise. Plans for both buildings have been matured, and contracts for the same awarded. Indeed, the work has already begun, and by the beginning of the college year, 1892-93, the Divinity School will be established in its own special quarters. But one thing more is needed to render its independence complete, namely, that some thoughtful benefactor should provide a fund for it, which, taken in connection with the Ryder fund, and two other funds that are almost certain to come into possession within a very few years, will be sufficient to sustain it without charge upon the general resources of the institution.

The Divinity School having been in a measure taken care of, the authorities will feel at liberty now to lay greater stress upon the importance of furnishing endowment and facilities to the engineering department. The growth of this department has been altogether beyond our expectation and present desire. We have more students in it than we can handle advantageously. The number has become already an embarrassment and burden. But the excellence of the work done and the almost uniform and marked success of the men graduated have drawn attention to this department of our work, and are bringing men to us more and more as the years go by. It would be a pity to close our doors against them when they come to us well prepared. But that we may render them the best service possible we should have an immediate increase of facilities. We need a building in which scientific instruction and research can be carried on, furnished also with ample laboratories for the students. We need also a commodious workshop in which the mechanical phases of engineering can be illustrated and taught. No better service could be rendered anywhere to applied sciences than in the gift of these things.

Such a benefactor, moreover, would greatly help the general interest of the College. It would enable us to remove our laboratories, scientific apparatus, and work rooms from our present main college hall and thus furnish us with much needed rooms for recitations. The additions to our teaching force have increased the number of classes to such an extent that our teachers are often sorely tried to find convenient rooms in which to meet students for lectures and other purposes. Such buildings therefore would serve a double purpose. While they would meet directly the wants of the scientific departments, they would also permit the main college building to be used exclusively for lectures and recitations.

The condition of work in the College of letters was never better or more hopeful than at present. The number of men added to the teaching force is greater than in any single year before. They are all of them exceptionally well qualified in the departments of instruction severally assigned to them. The enthusiasm and energy with which they have entered upon their duties, and the new methods they have introduced, have already given a fresh impulse to our scholarship. Other additions will soon be needed. The Engineering department will require almost immediately more teachers. The department of Modern Languages, must have another teacher at once. Such an appointment is rendered imperative by the adoption of a requirement for admission in either French or German in the place of Greek, and by the laying out, in consequence thereof and in conformity therewith, of a new course of study, involving a large amount of advanced work in either or both of these languages.

The opening of this course enables us to carry out a suggestion made by me in a report to this body several years ago, and reiterated in many subsequent reports. The New England colleges have seemed to me to fail in the discharge of an important function through their omission to provide a means of liberal training for the graduates of English high schools, or the graduates of the English course, in the high schools of those cities and towns where no classical school exists. Such pupils have usually read the same amount of Latin as those who belong to the college preparatory classes. They have had the same mathematical drill. But the time given to Greek by their fellow pupils has been devoted by them to one or both of the modern languages and to natural sciences. If, at the time of their graduation they feel that they would like a more extended course of study and begin to look about them for that purpose, they find the doors of the colleges absolutely barred against them. Of necessity they must go at once to trade, or enter without further preliminary study the technical or professional school. By this state of things many men of high intelligence and aspiration have lost the opportunity for liberal culture. More and more as enlightened men consider the situation, they feel its injustice. The most influential of secondary teachers are making an earnest protest against it. The adoption of this course by us removes a cause of reproach and opens the door of at least one New England college to the graduates of English high schools on equal terms with those who come with the traditional requirements. It is proposed also to arrange the other parts of the course so that this class of students may begin Greek in college and by a judicious election, accomplish as much, if they desire, in that language as is accomplished by those who meet the requirement in that subject at the time of entrance. The responsibility is laid upon us to be prepared with the necessary teaching force to fulfil the demands of the new provision.

The need of the establishment of a chair of History continues to be felt with increasing urgency. The requisite historical teaching is done now under many disadvantages. The assignment of the work to a teacher specially appointed for the purpose cannot be delayed much longer.

The work, under the direction of A. J. Patterson, D.D., of securing additional scholarships has made satisfactory progress. The whole number of scholarships secured since the special effort for this object began is twenty-seven, representing a total addition to the funds of fifty-four thousand dollars.

This report would make grateful mention of a gift in connection with one of the scholarships, provided by the friends of the late E. H. Chapin, D.D. The donation consists of a bronze bas-relief, portrait bust of Dr. Chapin, executed by St. Gaudens. This work of art has been set up near the pulpit in Goddard Chapel. It is an impressive reminder of the great preacher, who took a deep interest in the establishment and growth of the College. It is also a beautiful and appropriate ornament of our place of daily worship.

The widow of Oliver Dean, M. D., has given a fine large oil portrait of her late husband. The painting is by Darius Cobb, and is executed in a manner both artistic and truthful. Dr. Dean, besides being the founder of Dean Academy, which is an important tributary of the College, was at one time President of the board of trustees, and gave by will ninety thousand dollars to the College. His portrait therefore, is an appropriate and valued acquisition.

Attention is called in the remainder of this report to a specific account of the several departments of instruction.

The freshmen entered College with unusually good preparation in Latin, and did excellent work from the beginning to the end of the year. They read Nepos, the twenty-first book of Livy, Cicero's Cato Major, and the Satires and Ars Poetica of Horace, recited twice a week in Roman history and antiquities, and once a week in Latin composition. Considerable additional work was done by members of the class in writing and reading essays on subjects related to the work of the class room. Lectures also were given to the class on the history of the Latin language and literature, and on Roman topography, antiquities, etc.

The sophomores read the Odes of Horace, Cicero's Tusculan Disputations (1 book), and the Germania and Agricola of Tacitus, and recited once a week for the first half year in Latin composition.

Three seniors continued the study through the year which they had pursued from the beginning of their course, and graduated with honors in Latin. They read thoroughly and critically the whole of Cicero's duties, and portions of Catullus and Lucretius. They also spent considerable time in the study of Greek and Roman archæology and art.

During the year the freshmen received instruction in Greek six times a week for the first half year, and five times a week for the second half year. As the class was an exceptionally good one, it was able to read authors, that are not usually read with freshmen. The text books were, Plato's Protagoras, Homer's Odyssey, books II., III., IV., Æschines' Oration against Ctesiphon and Æschylus' Seven against Thebes. Thucydides, book VII., furnished the usual amount of sight reading. Instruction was also given to the class, once a week throughout the year, in prose composition. As an additional incentive, a course of lectures on Greek antiquities was also given to the class, once a week during the second half year, and though the attendance was voluntary, the better half of the class attended regularly and showed great interest in the subject.

The sophomores recited four times a week for the first half year. The text books were, Thucydides, book VII., and Euripides' Iphigeneia in Tauris. As usual a good deal of time was spent in analyzing the lyrical parts of the drama. One hour a week was devoted to Greek prose composition.

In addition to the foregoing two juniors elected Greek three times a week throughout the year. The text books for the first half year were, Aristophanes' Clouds, one hour; Homer's Odyssey for sight reading, one hour; prose composition, one hour. The text book for the second half year was Plato's Symposium. For sight reading they used Tyler's Lyrics and the Orations of Lysias. Besides this the principal events of ancient Greek history were gone over with especial reference to their influence upon the Greek character.

The Walker Professor of Mathematics reports that his work does not differ materially from that of the preceding year. The freshman class on account of its size was necessarily divided into two section. Mr. Lamson taught one section, and the Professor taught the other. The rank of both sections was substantially the same. In Taylor's College Algebra the whole of the book except theory of equations was studied. At this point additional instruction was offered the class as an extra elective. A large number entered upon the work, but the impossibility of getting five hours for both professor and pupils soon brought the work for most of the students to an end. One of the number kept up the work through the second half year. After finishing the algebra, solid and spherical geometry and plane trigonomy were taught through the second half year. The sophomores had spherical and plane analytical geometry. The two upper classes in engineering were taught the calculus. The second engineers were taught the elements of differential and integral calculus during the second half year; and the third engineers were taught by lectures and the application of the calculus in the solution of original problems throughout the year. The work in all the classes was as good as it has usually been; and the work of the freshman class, and of the third engineers was especially satisfactory.

The Walker Special Instructor reports that during the first half year he taught the following classes, namely, first engineers in physical arithmetic. A division of freshmen and first engineers in algebra. The first and second engineers in drawing. A class composed of the second electrical engineers and the sophomores, twenty-one men, for nine weeks in practical trigonometry. In the second half year his work was as follows: A division of freshmen and first engineers in solid geometry and trigonometry, and the first civil engineers in text book surveying. The work of the first half year in drawing, was continued until April. He also gave instruction in field work to the three classes of civil engineers for the remainder of the year.

The Professor of Civil Engineering during the past year has given the usual instruction to the third engineers in applied mechanics, bridge construction, railroad engineering and hydraulics. The testing machine given by Mr. Walter E. Parker and others, has been in frequent use, and the department is now in condition to make tests of materials for persons furnishing the specimens. It is hoped that friends of the College will avail themselves of the opportunity. The Professor has instructed the second engineers in steam engine, the work being carried on during the second half year. He also laid out, and made drawings, for the work done in the machine shop by this class. To the first engineers he gave instruction in descriptive geometry commencing at mid-year instead of the beginning, as has been the former practice. The class will finish the subject in the first half of next year. He instructed all classes in drawing during the second half year ; and one graduate in steam and fuel tests.

The Professor of Physics reports that the work was carried on through the year according to the programme. The juniors were met four times a week the first half year, and three times a week the second half year. The change adopted the preceding year of advancing Astronomy to the first half of the senior year allowed the time previously given to it to be devoted to physics, and the extra time allowed a more extended consideration of the subjects of heat and electricity than had been possible before. The seniors recited in Astronomy twice a week the first half year. A course of twenty-five lectures was given to an elective class, on the data and relations of the physical sciences. This course was attended by fifteen seniors, and a variable number of the divinity students. During the second half year an elective class of six seniors was met twice a week for the consideration of Spencer's First Principles. A course of lectures on the applications of electricity was given also the latter half of the year to the classes of electrical engineers.

The great increase in the number of students in electrical courses has so completely filled the laboratory space at command for their special lines of work, that but little laboratory work could be offered to others, so that no inducements could be specially given to enlist interest in this highly important educational field. This is not for the lack of time or instructors, but almost solely for room, and as soon as a proper physical laboratory is built and equipped, the course in physics can be vastly improved. Such a building is a crying need, quite as much for those in the literary course as for those taking technical courses.

The Professor of Electricity reports that the class in mechanics consisting of ten sophomores, fourteen first engineers, and fourteen special students met three times a week for the second half year. The work did not essentially differ in character or scope from that of the years immediately preceding.

Eleven second engineers and two special students pursued elementary work in the physical laboratory six hours a week throughout the year, following as usual Stewart and Gee in mechanics and electricity and Glazebrook and Shaw in sound, heat, and light. Eight third engineers and one special student spent twelve hours a week for the year in the laboratory and dynamo room. The work mainly consisted of electrical and magnetic measurements, the determination of the efficiencies and characteristic curves of dynamos and motors, and the manufacture of apparatus. The same class also met three times a week throughout the year for lectures upon various electrical subjects and for recitations in Thompson's Dynamo Electric Machinery, and in Kapp's Electrical

Transmission of Energy. Two graduate students pursued investigations in the laboratory, and one of them read Fleming's Induction of Electric Currents before taking the Master's degree.

There has been added to the equipment of the laboratory a Thomson's centiampere balance and a battery of sixty of the large cells of the American Accumulator Company. The latter is of inestimable value to the department, as from it may be drawn at any time almost any amount of electrical energy, thus obviating in a great measure the necessity of running the machinery in the dynamo room during recitation hours. We have also received from Dr. Mason, of the Simplex Company, a valuable gift of insulated wire for the storage battery room, and from the Economic Electric Manufacturing Company some incandescent lamps. An urgent need of the department is now a good alternating current dynamo; we are not however without hope that this want will soon be supplied.

The demand for a proper equipment of machine tools is imperative. In the present state of the science an electrical laboratory can hardly extensively pursue experimental work without it. Two or three thousand dollars would purchase an equipment ample for the present needs of the institution. Of course the great need of the physical and of the engineering departments is a proper building. We have about reached the limits of our development in our present quarters. Many more students cannot be accommodated, much work that we would like to do must be passed over, little in the line of original work can be undertaken, and only a few of the students of the regular course can elect laboratory work when all should take it.

The Professor of Chemistry reports that the usual course of lectures on general chemistry was given during the first half year. Owing to the change in the programme of studies, these lectures were attended not only by the junior and second year engineering classes, but also by the first year engineers. An advanced course in qualitative analysis, consisting of lectures and laboratory work was given to two seniors during the first half year, and an elementary course in the same subject, to eight juniors during the last half year. A course in quantitative analysis was given to two seniors through the whole year. A course in that subject was given also to a special student in chemistry during the first half year, and to a candidate for the degree of Master of Arts during the last half year. The laboratory course in general chemistry, which last year was elective and independent of the lectures and recitations in that subject, was taken by twenty-one students. In 1891-92 these courses will be consolidated, and those, taking the lectures in general chemistry will be compelled to spend four hours a week on laboratory work, as part of their course.

During the summer of 1890, the chemical laboratory was enlarged and new desks built so that it is possible to accommodate forty-three students.

That number however will work in the laboratory during 1891-92, and there is no chance for a further increase of space. The room, moreover, is very low and poorly ventilated and lighted, and not at all adapted to the needs of the course. The store-room also with the increasing number of students and necessary increase in stock of apparatus is very much too small for its purpose. The need of a new building for scientific purposes in which, or adjacent to which, shall be large and well-ventilated laboratories, is, thus, rapidly becoming a necessity, in order that satisfactory work may be accomplished.

The Professor of Modern Languages reports that, in character and quality, and in the number of classes in the department, the work of the past year, resembles the one preceding. The year opened with two classes each in French and German. The class in elementary German was composed of sixteen members, ten juniors, two sophomores, four specials, and beside a thorough study of the grammar, in connection with the usual familiar lectures and drill, with which all elementary instruction in the department is usually begun, read in the half year some hundred pages of easy prose, *Im Zwielicht*, and a score of lyric poems. Of this class eleven elected the study in the second half year, and read three times a week, six cantos of Wieland's *Oberon*, and five cantos of *Hermann und Dorothea*. The advanced class in German also continued through the year with ten members, four seniors, three sophomores (ph.), three specials in the first half year, and eight members, five seniors, three sophomores (ph.), in the second half year. Translating three times a week they covered in the first half year the last three cantos of *Hermann und Dorothea* begun the preceding term. Schiller's *Jungfrau von Orleans*, and Wallenstein's *Lager;* in the second half year the remainder of Wallenstein's was read, and a fourth hour each week was devoted to translation from English into German. FRENCH II., chiefly an elective class, was also continued through the year. In its first half it consisted of nine members, five seniors, one sophomore (ph.), three freshmen, who read the *Andromaque*, *Athalie*, and *Phedre* of Racine. Seven of the number continued through the second half year, and read five other classic dramas, as follows: Molière's *Le Misanthrope*, *Les Femmes Savantes*, and *L'Avare*, Corneille's *Polyeucte*, Voltaire's *Zaire*. The discussion of the ethical and literary aspects of the plays were entered into by this class with unusual spirit. The freshmen in the class were students who came to the A. B. course well-fitted in French, and to whom the study was permitted as an extra elective. Their interest and zeal made them a valuable addition, none entering with more spirit into the discussions. FRENCH I., composed of three seniors and one sophomore (philos. B.), continued until mid-year, and devoted its time to the romantic school. Crane's *Romanticisme Français* was used as a text-book, and the class also read Victor Hugo's *Hernani*, and part of *Ruy Blas*. The number of classes in the second half year was the same as in the first, yet with five additional hours of class work. French I. was discontinued, but Elementary French was begun with daily recitation. As in former years those members of the first class of engineers who had not studied French were instructed by a tutor, and fortunately the services of Mr. Sewall of the class of 1890, who had rendered similar service to the preceding class, were again secured. His division consisted of seventeen members, and read nearly double the amount accomplished the year before, some one hundred pages of Super's reader, besides giving careful study to its first part of Edgren's grammar. The other section composed of twenty students, seven sophomores, one freshman (philos. B.) eight engineers, and three special, read one hundred and fifty pages of Super's reader, and covered the greater part of Edgren's grammar, writing fifteen of the more advanced exercises.

The demands upon the professor have, as for many years, been very severe, especially in the second half year. The employment of an assistant has not served to lessen the number of hours of class-room work required of him, though it insures better results by permitting the separation of men of widely different preparation for college work. With the introduction of the new course it will become a mathematical impossibility to carry forward the work with a single professor. For some years there has been no reason, apart from the pecuniary one, why French and German, to say nothing of Italian, should constitute one department, while Latin and Greek are made two. The desirable change would be to create a new department of Romance languages with an experienced teacher at its head. If for reasons of necessary economy this is impossible. the only alternative would seem to be to put in training abroad some promising young man who on taking up work here should first share the instruction in the undivided department until such time as the finances of the College would permit the creation of a new professorship.

Mr. Sewall reports that his class in French, made up of first engineers, varied somewhat in numbers at first, but finally settled down to seventeen, nearly twice as many as he had last year. He used the same text books as Professor Fay, mainly, Super's reader, and Edgren's grammar, except that whereas last year he had only the introductory part of the grammar, this year he had the complete book. This grammar is found to be well adapted to beginners. Being divided into three separate parts, each complete and more exhaustive than the preceding, it provides at the same time both advance work and review.

On the completion of Part I. of the grammar, the class took up the reader on alternate days with work in Part II. of the grammar. On the completion of Part II., the men were given a number of exercises in French composition. They read every day paying particular attention to the principal parts of verbs and questions of syntax, and finally for a fortnight or so, they confined themselves to rapid translation both prepared and at sight. Although the men have spent no more time on grammar than last year's class, they have gone over a great deal more ground, and are much better founded in the principles of the language. The men attained such proficiency in translation that, at the end of the year, they were able to read four and five pages a day. In all one hundred and ten pages, which is more than twice as much as last year's class read. This is said to be good work, since the men had no previous knowledge of Latin, or French.

In English Composition, extemporaneous, there were twenty-three men, all told. Professor Shipman found this class too large to manage, and on his advice it was decided to have each division come in on alternate weeks. Mr. Sewall also on his own responsibility, arranged for another hour. In this way the men had a full hour to write in and time was found to look the papers over, and the extra hour afforded ample time for each man to read his own paper, and for the teacher to make any remarks that its merits, or demerits, demanded. A good deal of interest was manifested in the work, and most encouraging results have followed even these fortnightly exercises. The opinion is expressed that rhetoric can be taught to these men more advantageously by systematic, progressive work in actual writing coupled with talks on the underlying principles of the science, and perhaps the examination of different styles of composition, than by text book work. Two hours a week for the year of this work, or even two hours for the first half year, and one for the second half year, would be more profitable than three hours of text-book rhetoric for one half year only.

The Professor of Oratory reports that the work, owing to his previous duties, determining the date of his engagement, extended through but three months of the second half year. During this time the freshmen and the sophomores respectively met two hours a week, reading and reciting pieces of good literature. The elective class, consisting of three seniors and six juniors, devoted two hours a week to general class work, as well as to individual preparation and delivery of selections. A public recital, to which all members of the College were invited, served to test, in the presence of an audience, the work previously done. On June 9th, the usual prize-readings were held. Two classes were formed in the Divinity School; an elementary class of eleven members, two hours a week; and an advanced class of ten members, one hour a week. The Bible was used as a reading-book, selections also being made from hymn and sermon literature.

The Professor of Rhetoric, Logic, and English

Literature reports that the work of the year differed in no important particulars from that reported for previous years. Changes of text-books were made in all the classes, and one class in English Literature which had presented great inequality of work in the first half year, was divided for the second half year with results justifying the additional labor. Although the subject of English literature had in accordance with urgent and long-felt need, been assigned to the new Professor of English and Oratory, the classes formed at mid-year continued to the close under the former instruction. In the second half year the weekly exercise in composition required of first engineers, was placed, as noted above, in charge of Mr. Sewall.

A summary of the work of the year is herewith presented:

FIRST HALF YEAR.

A. Required Work.
1. *Logic*, with Seniors, 4 hours.
2. *Rhetoric*, with Sophomores, 4 hours.
3. *Rhetoric*, with 2d. Engineers, 3 hours.
4. *Composition*, with Freshmen, 1 hour.
5. *Composition*, with 1st Engineers, 1 hour.
(Composition, amounting to one hour a week, in connection with Logic and Rhetoric, included in the above statement of number of hours.)

B. Elective Work.
6. *Eng. Lit.*, with Seniors, 3 hours.
7. *Eng. Lit.*, with Juniors, 3 hours.

SECOND HALF YEAR.

A. Required Work.
1. *Psychology*, with Juniors, 4 hours.
(one hour to Composition).
[2. Composition, with 1st Engineers, 1 hour.
by Mr. Sewall.]

B. Elective Work. 3. *Eng. Lit.*, with Seniors, 3 hours.
4. *Eng. Lit.*, with Juniors, 3 hours.
5. *Eng. Lit.*, with Juniors, 3 hours.
6. *Eng. Lit.*, with Sophomores, 3 hours.

The transfer of English literature to another professor will give opportunity for other electives in Professor Shipman's remaining subjects, which are rhetoric and composition, psychology, logic. It is greatly to be desired that in all these subjects additional work should be provided for. This will be attempted in part the coming year.

The President gave the regular instruction to the seniors in Ethics four hours a week for the first half year. Calderwood's text-book in moral philosophy formed the basis of the work. But students are not held rigidly to the views of the author. Freedom of discussion is encouraged and effort is made to secure a full and candid consideration of leading ethical theories, ancient and modern. Seven seniors took the elective in Ancient Law three hours a week for the first half year. Careful attention is given to the historical phases of the subject and pains taken, not only to trace jural conceptions to their source but to show the influence of primitive institutions upon modern civic ideas and social habits. Students thus, while obtaining an insight into the principles of law and the foundation of jurisprudence, secure valuable training in history and sociology.

During the second half year the seniors were met four times a week for the study of Political Economy. The new work published by Professor Marshall of Cambridge University, England, was the text-book. Although this work is one of thoroughness and profundity, it was taken up by the class with great interest and pursued to the end with patience and enthusiasm. Independent problems were assigned and in numerous instances not a little ingenuity was shown in working them out. The same number of seniors that elected Ancient Law for the first half year, continued through the second half year, pursuing the subject of International Law three hours a week. In all the foregoing subjects the work with text-books is supplemented by lectures, while independent lines of research are outlined or suggested.

The accessions for the year to the Library were three hundred and seventy-two volumes, three hundred and seventeen pamphlets and nineteen hundred and ninety numbers of periodicals. As there were returned to the Department of the Interior two hundred and twenty-three volumes, the net increase for the year is one hundred and forty-nine volumes. The total number now in the Library is twenty-seven thousand four hundred and ninety-six. There were added by purchase one hundred and seven volumes, of which eighty-nine were purchased from the income of the Joy fund, and eighteen from the income of the Vannevar fund. There was a decrease in the number of volumes taken from the Library, which cannot be accounted for easily as the Library was well patronized. It may be that the use of the books was more in the Library, and of that use no account is kept. The electric lighting during the short afternoons was a success, and greatly enjoyed by the students. Mr. Sewall proved a valuable assistant. He made a shelf list of the Ryder books, and did a great deal of work in re-arranging.

Alfred P. Putnam, D.D., Lecturer on the History of Bible Lands, gave eight lectures during the second half year. The earlier chapters of the book of Genesis in their historical aspects furnished the topics. These were expounded not only by bringing out the meaning of the narrative but by turning on the light of modern discovery. The treatment was learned and eloquent. The lectures were open to the public. Attendance on the part of the students was voluntary, but those who followed them to the close cannot have failed to receive profit.

The report of the Divinity School prepared by Professor Leonard at the request of faculty of the School, and the report of the Barnum Museum of Natural History, by the Director, Professor Marshall, are submitted herewith.

E. H. CAPEN.

Tufts College, Sept. 17, 1891.

# The Divinity School.

# THE DIVINITY SCHOOL.

*To the President;*

In offering the report of the Divinity School for the college year 1890-91, it is grateful first of all to acknowledge the constant interest of the honorable board of Trustees as shown in providing free facilities for our work, and in the generous increase from time to time of the School's teaching force.

We recognize, also, the great help which we have received from the establishment of annual lectureships by which much of our work has been supplemented. For help during the past year we are under especial obligations to the Rev. Charles Conklin, for a course of lectures on the principle and the conduct of Christian revivals.

In this connection, too, in view of the assistance we were enabled to give to many of our most eager students, we desire anew to express our indebtedness to the late A. Dockstader, and to S. F. Woodbridge, for valuable gifts to the Divinity School. Several of our most worthy and promising men have been kept in the School, who, but for the gifts of these benefactors, would have been obliged to give up their professional studies for a time, if not altogether. Efficient help also, is promised one department of the School, by W. S. Perkins, D. D., in the offer of a prize to members of the senior class for the encouragement of extempore discourse, We trust that it is not too early for us to refer to the noble gift by Dr. Miner, of a divinity hall, and the gift to the College and School of a new dormitory, by generous friends of our growing institution. Already we begin to realize how much these new buildings will contribute towards the needful autonomy, both of the College of letters and of the Divinity School.

It is easy to pass from the facilities and aids to our work from outside sources, to the work itself. We rejoice that it is the purpose of so many young men to prepare for the work of the Christian ministry; and that so many of our active pastors are ready to further the cause of the Church by commending to young persons in their parishes, our most sacred commission. We attribute a good part of our larger success in the work committed to us to the facts here alluded to. More and more we feel God is drawing the feet of young men into those ways which lead to his service in the ministry of his Son. At the beginning of the year thirty-five were on our roll of membership. Five of them dropped out of the ranks before the end of the year.

We have cause for congratulation that the School has constantly increased in numbers notwithstanding the increasing demand from year to year for higher preparation for entrance. We call attention, also, to the fact that the geographical constituency of the School widens from year to year. During the year which is covered by this report, we had representatives from Massachusetts, Rhode Island, Maine, New Hampshire, New York, Ohio, Pennsylvania, Michigan, Kansas, Minnesota, Dakota, New Brunswick, Canada, Turkey. And in this widening constituency we feel that the School is carrying out the catholic ideas of its founders, that men may come to us from varied and distant fields, and return to the same fields to take up their work of life.

The history of the School has not been marked by any great change in the subjects of study, nor in the order of their treatment. The tendency has been towards specialization in work, as favored by the appointment of new teachers, and, in some instances, by the introduction of new subjects. In the normal growth of the School this work will necessarily go on.

In choice of subjects, and in methods of instruction, the

School aims to keep in touch with the life of to-day. It cares less for traditional modes of teaching, and more and more for freedom of faith and thought, in the generous discussion of the themes that are moving the minds and hearts of the best men in our time. In this way students are protected against all panic in their spiritual life, and go to their work at last, confident in the truth, and in the method of its attainment and promulgation. Our conviction deepens year by year that students in our Divinity School ought to be encouraged in a certain freedom in research, aided and guided, of course, by the professors, and by what we believe to be the conserving atmosphere of the institution.

It is the method of our School that the student shall be able at one time to throw his interest into one or two lines of work, and so be saved from the weakening effects which are likely to result if energy is distributed over many subjects. Our students are engaged upon three or four, in some instances, upon five or six studies, it may be, but the emphasis in work, is put upon one or two subjects, or, if not upon specific subjects, upon a few distinct lines of study.

In the main, the studies of the sub-junior year are those which have a disciplinary value though pursued with reference to professional uses. In the junior year the emphasis is on history. In the middle year the chief care is given to practical theology, and the higher problem, of ethics and religion. Of course, in spite of our best efforts to keep studies distinct, and the interest single, the subjects as dealt with will over-lap and run into each other.

In the catalogue of the College appears an analysis of the work in the different departments of the School. By these analyses it will be seen what is the order and scope of instruction in the several departments. The catalogue also calls attention to the general exercises of the School for which all the members are brought together. We feel that more ought to be done to promote the unity of the spirit, and that community of Christian thought and feeling, which are educated and fostered in the social religious meeting. Heretofore our facilities in the building we have occupied, have not favored us in this kind of work, but with the new facilities so soon to be ours, if we do not do more to strengthen the bonds of the spirit, and to help the students in their deeper life, we shall be without excuse. For the coming year the outlook is encouraging, and we take up our duties again with new hope.

On behalf of the Faculty,

CHARLES H. LEONARD.

Tufts College,
Sept. 17, 1891.

# The Barnum Museum.

# THE BARNUM

# MUSEUM OF NATURAL HISTORY.

*To the President*;

Courses of instruction have been given during the past year in Botany, Physiology, Zoology, Biology, Geology and Mineralogy.

The following donations have been received at the Museum during the past year.

1. The mounted skin of a large Bengal tiger, (Felis tigris)

2. The mounted skin of an Eland, (Oreas canna), from South Africa.

3. The mounted skin of an elk (Cervus Canadensis) from California.

4. The mounted skin of a polar bear, (Thalassarctos maritimus).

5. The mounted skin of a Puma, (Felis concolor) from Texas.

The skeletons of the above-named animals will be received during the coming year.

6. The skeleton of a Hartebeest, (Alcelaphus caama) from South Africa.

7. A collection of 160 Indian arrow and spear heads of stone from the Rev. Mr. Livermore, of New York City.

8. A fine collection of shells from Florida, donated by Mrs. James W. Schumacher, of Jacksonville, Florida.

9. A specimen of silver ore from Colorado, weighing nearly 100 lbs. from Professor S. Minot Pitman, of Philadelphia.

10. The collection of Colorado minerals donated by the Rev. Selden Gilbert, and mentioned in last year's report, have been examined and found to consist of more than two hundred and fifty good specimens of gold and silver ores and fossils. They have been labeled and recorded in the general catalogue of the Museum.

11. Skulls and teeth of Oreodon gracilis from Nebraska, by Professor J. S. Kingsley.

12. Specimens of Indian axes and carving in stone from Ohio, by Professor A. E. Dolbeare.

13. A finely-mounted specimen of the Osprey (Pandion haliaetus) donated by Mr. N. Currier, of Boston.

14. Silver and Gold Ore from Emma Nevada Mining & Milling Co., Melrose, Montana.

No injury has been done to the museum building, and the collections have suffered no loss during the past year.

Respectfully submitted,

JOHN P. MARSHALL.

Tufts College,
Sept. 17, 1891.

UNIVERSITY OF ILLINOIS-URBANA
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